United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with the United States Department of Interior, Bureau of Land Management, and the Mojave Desert Resource Conservation District

Soil Survey of Clark Mountain and Jean Lake Grazing Allotments, Part of the Mojave Desert Area, Northeast Part, and Crescent Peak Grazing Allotment, Part of the Mojave National Preserve Area, California

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

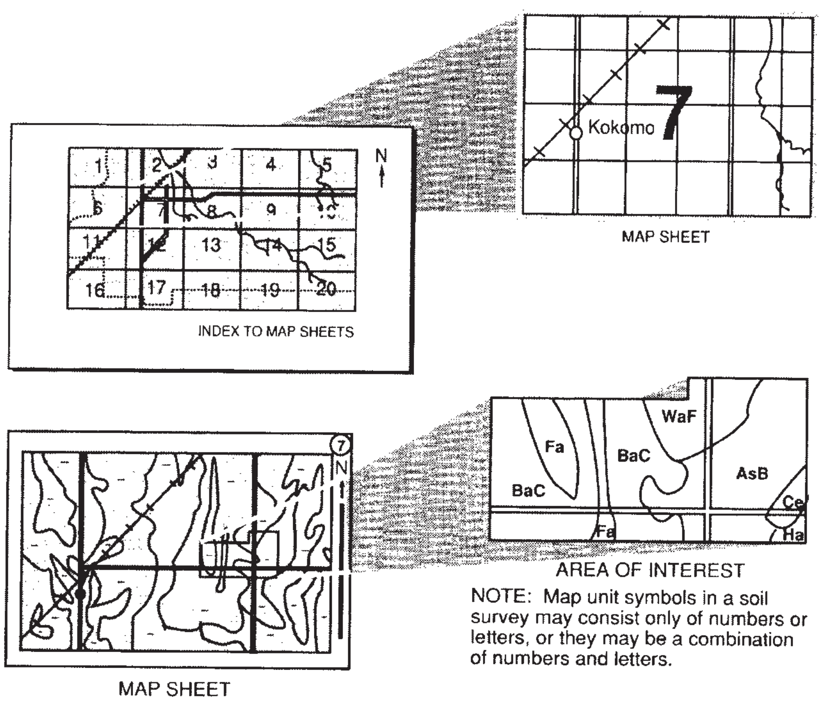
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service; the United States Department of Interior, Bureau of Land Management; and the Mojave Desert Resource Conservation District. The survey is part of the technical assistance furnished to the Bureau of Land Management.

Major fieldwork for this soil survey was completed in 2006. Soil names and descriptions were approved in 2006. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2006. The most current official data are available on the Internet.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

The correct citation for this survey is:

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Soil Survey of Clark Mountain and Jean Lake Grazing Allotments, part of the Northeast Mojave Desert Area, Northeast Part, and Crescent Peak Grazing Allotment, part of the Mojave National Preserve Area, California. http://soils.usda.gov/.

Cover: An area of Arizo soils on a broad fan apron. Clark Mountain, which is directly west of the western boundary of the Clark Mountain Grazing Allotment, is in the background. (Photo by Jeff Goats, USDA–NRCS)

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2007

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Lincoln E. Burton
State Conservationist
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Soil Survey of Clark Mountain and Jean Lake Grazing Allotments, part of the Mojave Desert Area, Northeast Part, and Crescent Peak Grazing Allotment, part of the Mojave National Preserve Area, California

By Carrie-Ann Houdeshell, Jeff Goats, Leon Lato, Heath McAllister, and Allison Tokunaga, Natural Resources Conservation Service

Fieldwork by Carrie-Ann Houdeshell, Jeff Goats, Leon Lato, Heath McAllister, and Allison Tokunaga, Natural Resources Conservation Service

United States Department of Agriculture,
Natural Resources Conservation Service,
in cooperation with
United States Department of the Interior,
Bureau of Land Management, Sacramento, California, and
the Mojave Desert Resource Conservation District

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area (fig. 1). The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship,

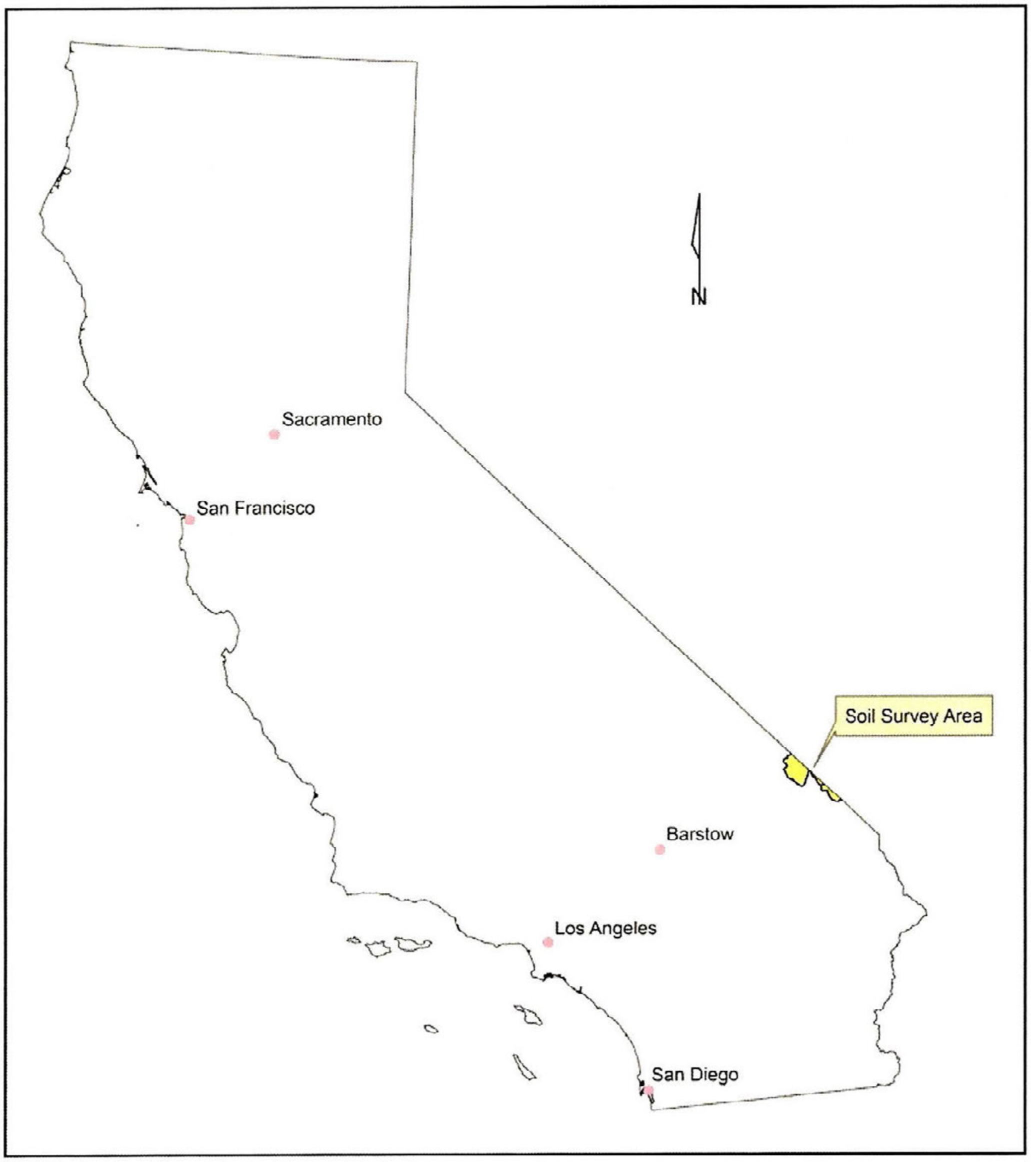

Figure 1.—Location of the survey area in California.

are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class

in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show shrubs, buildings, fields, roads, and drainageways, all of which help in locating boundaries accurately.

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Soils on Bolson Floors

1. Typic Haplosalids

Very deep, fine-loamy, salt-affected soils that formed in lacustrine deposits; on Ivanpah Lake on the eastern edge of the Clark Mountain BLM Grazing Allotment

Setting

Landform: Playa and lower fan skirts
Slope: 0 to 2 percent
Elevation: 785 to 795 meters
Annual air temperature: 68 to 73 degrees F
Average annual frost-free days: 280 to 320 days

Composition

Extent of the map unit in the survey area: 2 percent
Extent of the major components in the map unit:
Typic Haplosalids and similar soils—90 percent
Extent of the minor components in the map unit:
Bluepoint and similar soils—10 percent

Soil Properties and Qualities

Typic Haplosalids
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on landform: Playa and outer lake plains
Parent material: Lacustrine deposits
Texture of the surface layer: Clay loam and silty clay loam

Slope: 0 to 2 percent
Typical vegetation: Barren

Minor Components

- Bluepoint soils on fan skirts

Use and Management

Major uses: Wildlife habitat and recreation

Wildlife habitat
Management concerns: Excess salts limit vegetation to salt-tolerant plants around the edges of the playa.
Management measures: Adjacent and included areas of minor soils and ecological sites that can provide suitable habitat should be protected.

Recreation
Management concerns: Dustiness is a concern when the playa is dry, during periods of high winds, and during periods of high usage.
Management measures: Vehicular traffic on the playa and adjacent areas should be limited when the soils are dry.

2. Typic Calcigypsids-Petronodic Haplocalcids-Typic Haplosalids-Haymont

Very deep, loamy, salt-affected soils that formed in lacustrine deposits and alluvium derived from limestone and dolomite; on Mesquite Lake in the northwest corner of the Clark Mountain BLM Grazing Allotment

Setting

Landform: Playa and the surrounding lake terraces, plains, and dunes
Slope: 0 to 50 percent
Elevation: 760 to 790 meters
Annual air temperature: 63 to 68 degrees F
Average annual frost-free days: 280 to 320 days

Composition

Extent of the map unit in the survey area: 13 percent
Extent of the major components in the map unit:
Typic Calcigypsids and similar soils—30 percent
Petronodic Haplocalcids and similar soils—25 percent
Typic Haplosalids and similar soils—15 percent
Haymont soils—15 percent
Extent of the minor components in the map unit:
Bluepoint and similar soils—12 percent
Haplogypsids and similar soils—3 percent

Soil Properties and Qualities

Typic Calcigypsids
Depth class: Very deep
Drainage class: Well drained
Position on landform: Lake terraces
Parent material: Lacustrine deposits rich in sulfate salts
Texture of the surface layer: Sandy loam

Slope: 0 to 2 percent
Typical vegetation: Shadscale

Petronodic Haplocalcids
Depth class: Very deep
Drainage class: Well drained
Position on landform: Hummocky lake plains and alluvial flats
Parent material: Alluvium derived from limestone and dolomite
Texture of the surface layer: Loamy fine sand and fine sandy loam
Slope: 0 to 2 percent
Typical vegetation: Shadscale, Mojave seablite, and honey mesquite

Typic Haplosalids
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on landform: Playa
Parent material: Lacustrine deposits rich in chloride salts
Texture of the surface layer: Silt loam and silty clay loam
Slope: 0 to 2 percent
Typical vegetation: Barren

Haymont
Depth class: Very deep
Drainage class: Well drained
Position on landform: Lake plains
Parent material: Mixed alluvium
Texture of the surface layer: Fine sandy loam
Slope: 0 to 2 percent
Typical vegetation: Fourwing saltbush, Torrey's saltbush, honey mesquite, and alkali sacaton

Minor Components

- Bluepoint soils on dunes
- Haplogypsids on hummocky lake plains

Use and Management

Major uses: Grazing, wildlife habitat, and recreation

Grazing
Management concerns: Off-road vehicles can destroy existing ecological sites that provide forage.
Management measures: Limiting vehicular traffic on lake plains adjacent to the playa helps to preserve grass forage species.

Wildlife habitat
Management concerns: Excess salts limit vegetation to salt-tolerant plants around the edges of the playa.
Management measures: Adjacent and included areas of minor soils and ecological sites that can provide suitable habitat should be protected.

Recreation
Management concerns: Dustiness is a concern when the playa is dry, during periods of high winds, and during periods of high usage.
Management measures: Vehicular traffic on the playa and adjacent areas should be limited when the soils are dry.

Soils on Fan Piedmonts

3. Arizo

Very deep, sandy-skeletal soils that formed in mixed, recent alluvium; on large, expansive alluvial fans and fan aprons throughout the Clark Mountain BLM Grazing Allotment and the Jean Lake BLM Grazing Allotment

Setting

Landform: Alluvial fans, fan aprons, and fan skirts
Slope: 2 to 8 percent
Elevation: 790 to 1,525 meters
Annual air temperature: 55 to 68 degrees F
Average annual frost-free days: 240 to 300 days

Composition

Extent of the map unit in the survey area: 31 percent
Extent of the major components in the map unit:
Arizo and similar soils—70 percent
Extent of the minor components in the map unit:
Peskah and similar soils—12 percent
Tonopah and similar soils—12 percent
Hypoint and similar soils—3 percent
Pipeflat and similar soils—2 percent
Rock outcrop—1 percent

Soil Properties and Qualities

Arizo
Depth class: Very deep
Drainage class: Excessively drained
Position on landform: Alluvial fans and fan aprons
Parent material: Alluvium derived from mixed sources
Texture of the surface layer: Sand, loamy sand, and loamy coarse sand
Slope: 2 to 8 percent
Typical vegetation: Creosote bush, white bursage, and big galleta

Minor Components

- Peskah soils on fan remnants in the Jean Lake BLM Grazing Allotment
- Tonopah soils on fan aprons and inset fans
- Hypoint soils on sand sheets over fan aprons and footslopes
- Pipeflat soils on sand sheets over lower fan aprons
- Rock outcrop on inselbergs

Use and Management

Major uses: Grazing, wildlife habitat, and recreation

Grazing
Management concerns: Limited available water capacity due to excess sand and gravel is a concern throughout most of the unit.
Management measures: Included areas of minor soils and ecological sites that can provide forage for cattle should be protected.

Wildlife habitat
Management concerns: These soils are poorly suited to habitat for tortoises and other burrowing animals because of excessive sand and gravel in the surface layer.

Management measures: Included areas of minor soils and ecological sites that can provide suitable habitat should be protected.

Recreation

Management concerns: Because of excessive sand, dustiness is a concern when the soils are dry, especially in areas that are subject to heavy vehicular traffic.

Management measures: Vegetation can be protected against damage or destruction by limiting traffic to previously established trails.

4. Popups-Owlshead-Minehart

Shallow to very deep, loamy and loamy-skeletal soils that formed in mixed, older alluvium; on the upper end of fan piedmont slopes throughout the Clark Mountain BLM Grazing Allotment and the Crescent Peak BLM Grazing Allotment

Setting

Landform: Fan remnants
Slope: 2 to 30 percent
Elevation: 1,000 to 1,440 meters
Annual air temperature: 55 to 65 degrees F
Average annual frost-free days: 240 to 300 days

Composition

Extent of the map unit in the survey area: 9 percent
Extent of the major components in the map unit:
Popups and similar soils—50 percent
Owlshead and similar soils—25 percent
Minehart and similar soils—15 percent
Extent of the minor components in the map unit:
Arizo and similar soils—10 percent

Soil Properties and Qualities

Popups

Depth class: Moderately deep
Drainage class: Well drained
Position on landform: Summits and side slopes of fan remnants
Parent material: Alluvium derived from mixed sources
Texture of the surface layer: Sandy loam
Slope: 4 to 30 percent
Typical vegetation: Blackbrush, creosote bush, and big galleta

Owlshead

Depth class: Shallow
Drainage class: Well drained
Position on landform: Summits and side slopes of fan remnants
Parent material: Alluvium derived from mixed sources
Texture of the surface layer: Fine sandy loam
Slope: 2 to 30 percent
Typical vegetation: Blackbrush, creosote bush, and big galleta

Minehart

Depth class: Very deep
Drainage class: Well drained
Position on landform: Fan remnants
Parent material: Alluvium derived from volcanic and metamorphic sources
Texture of the surface layer: Loam and fine sandy loam

Slope: 2 to 8 percent
Typical vegetation: Cooper's goldenbush and James' galleta

Minor Components

- Arizo soils on inset fans and in drainageways

Use and Management

Major uses: Grazing, wildlife habitat, and recreation

Grazing
Management concerns: Surface water flow is minimal, and the finer textured soils limit growth of forage.
Management measures: The small included areas of minor soils and ecological sites that can provide forage for cattle should be protected.

Wildlife habitat
Management concerns: These soils are unsuited to habitat for desert tortoises and other burrowing animals because of fine-textured horizons and the limited depth to root-restricting layers.
Management measures: Included areas of minor soils and ecological sites that can provide suitable habitat should be protected.

Recreation
Management concerns: Vehicles are difficult to maneuver and unsafe on side slopes where the slope is more than 20 percent. Also, traffic on steep slopes increases the hazard of erosion.
Management measures: Vehicle use should be limited to summits and the less-sloping side slopes.

5. Colosseum-Weiser

Very deep, sandy-skeletal and loamy-skeletal soils that formed in alluvium derived from limestone and dolomite; on broad alluvial fans, fan aprons, and fan remnants adjacent to limestone hills and mountains throughout the Clark Mountain BLM Grazing Allotment

Setting

Landform: Alluvial fans, fan aprons, fan remnants, and drainageways
Slope: 2 to 8 percent
Elevation: 790 to 1,200 meters
Annual air temperature: 60 to 68 degrees F
Average annual frost-free days: 240 to 300 days

Composition

Extent of the map unit in the survey area: 14 percent
Extent of the major components in the map unit:
Colosseum and similar soils—68 percent
Weiser and similar soils—30 percent
Extent of the minor components in the map unit:
Sodic Haplocalcids and similar soils—2 percent

Soil Properties and Qualities

Colosseum
Depth class: Very deep
Drainage class: Somewhat excessively drained
Position on landform: Alluvial fans, fan aprons, and drainageways
Parent material: Alluvium derived from limestone and dolomite

Texture of the surface layer: Fine sandy loam, loam, sandy loam, and sand
Slope: 2 to 8 percent
Typical vegetation: Creosote bush, white bursage, and big galleta

Weiser
Depth class: Very deep
Drainage class: Well drained
Position on landform: Fan aprons and fan remnants
Parent material: Alluvium derived from limestone and dolomite
Texture of the surface layer: Fine sandy loam and loam
Slope: 2 to 8 percent
Typical vegetation: White bursage, blackbrush, shadscale, and creosote bush

Minor Components

- Sodic Haplocalcids on fan skirts

Use and Management

Major uses: Grazing, wildlife habitat, and recreation

Grazing
Management concerns: Limited available water capacity due to excess sand and gravel is a concern throughout most of the unit.
Management measures: Included areas of minor soils and ecological sites that can provide forage for cattle should be protected.

Wildlife habitat
Management concerns: These soils are poorly suited to habitat for tortoises and other burrowing animals because of excessive sand and gravel in the surface layer.
Management measures: Included areas of minor soils and ecological sites that can provide suitable habitat should be protected.

Recreation
Management concerns: Because of excessive sand, dustiness is a concern when the soils are dry, especially in areas that are subject to heavy vehicular traffic.
Management measures: Vegetation can be protected against damage or destruction by limiting traffic to previously established trails.

Soils on Mountains and Hills

6. Copperworld

Very shallow and shallow, loamy soils that formed in residuum and colluvium derived from metamorphic rock; on the west side of the Clark Mountain BLM Grazing Allotment, abutting the Clark Mountain Range

Setting

Landform: Metamorphic hills and mountains
Slope: 15 to 60 percent
Elevation: 980 to 1,600 meters
Annual air temperature: 55 to 65 degrees F
Average annual frost-free days: 210 to 300 days

Composition

Extent of the map unit in the survey area: 5 percent
Extent of the major components in the map unit:
Copperworld and similar soils—75 percent

Extent of the minor components in the map unit:
Rock outcrop—10 percent
Langwell and similar soils—7 percent
Lithic Torriorthents and similar soils—7 percent
Arizo and similar soils—1 percent

Soil Properties and Qualities

Copperworld
Depth class: Very shallow and shallow
Drainage class: Somewhat excessively drained
Position on landform: Backslopes of hills and mountains
Parent material: Residuum and colluvium derived from metamorphic sources
Texture of the surface layer: Sandy loam and loamy sand
Slope: 30 to 60 percent
Typical vegetation: Blackbrush, Death Valley jointfir, green ephedra, and buckwheat

Minor Components

- Rock outcrop on shoulders and backslopes of hills and mountains
- Langwell soils on side slopes of mountains at lower elevations
- Lithic Torriorthents on south facing, convex backslopes of hills and mountains
- Arizo soils on footslopes and in drainageways

Use and Management

Major uses: Wildlife habitat

Wildlife habitat
Management concerns: These soils are unsuited to habitat for tortoises and other burrowing animals because of the shallow depth to bedrock.
Management measures: Included areas of minor soils and ecological sites that can provide suitable habitat should be protected.

7. Hartpeak-Highland-Copperworld, Cool

Very shallow to moderately deep, loamy and loamy-skeletal soils that receive precipitation in spring and summer and that formed in residuum and colluvium derived from metamorphic and mixed volcanic sources; on the Castle Mountains in the Crescent Peak BLM Grazing Allotment and at the upper elevations on mountains and hills in the Clark Mountain BLM Grazing Allotment

Setting

Landform: Metamorphic and mixed volcanic hills and mountains
Slope: 15 to 60 percent
Elevation: 1,300 to 1,800 meters
Annual air temperature: 52 to 57 degrees F
Average annual frost-free days: 160 to 200 days

Composition

Extent of the map unit in the survey area: 5 percent
Extent of the major components in the map unit:
Hartpeak and similar soils—30 percent
Highland and similar soils—30 percent
Copperworld, cool, and similar soils—15 percent
Extent of the minor components in the map unit:
Straycow and similar soils—10 percent
Lithic Ustic Haplocalcids—5 percent

Lithic Ustic Haplargids—5 percent
Rock outcrop—5 percent

Soil Properties and Qualities

Hartpeak
Depth class: Moderately deep
Drainage class: Well drained
Position on landform: Backslopes of hills
Parent material: Residuum and colluvium derived from mixed volcanic sources
Texture of the surface layer: Loam and silt loam
Slope: 15 to 50 percent
Typical vegetation: Big galleta, James' galleta, banana yucca, and desert needlegrass

Highland
Depth class: Moderately deep
Drainage class: Well drained
Position on landform: Backslopes of mountains
Parent material: Residuum and colluvium derived from volcanic sources
Texture of the surface layer: Loam and fine sandy loam
Slope: 15 to 50 percent
Typical vegetation: Big galleta, James' galleta, banana yucca, and desert needlegrass

Copperworld, cool
Depth class: Very shallow and shallow
Drainage class: Somewhat excessively drained
Position on landform: Backslopes of hills and mountains
Parent material: Residuum and colluvium derived from metamorphic sources
Texture of the surface layer: Sandy loam and loamy sand
Slope: 30 to 60 percent
Typical vegetation: Blackbrush, western juniper, and desert needlegrass

Minor Components

- Straycow soils on side slopes of hills and mountains
- Lithic Ustic Haplocalcids on backslopes of mountains
- Lithic Ustic Haplargids on north facing backslopes of hills and mountains
- Rock outcrop on summits, side slopes, and footslopes of mountains

Use and Management

Major uses: Wildlife habitat

Wildlife habitat
Management concerns: The Copperworld, cool, soils are poorly suited to habitat for tortoises and other burrowing animals because of the very shallow and shallow depth to bedrock.
Management measures: Included areas of minor soils and ecological sites that can provide suitable habitat should be protected.

8. Umberci-Rock Outcrop

Rock outcrop and very shallow, loamy-skeletal soils that formed in residuum and colluvium derived from limestone and dolomite; in the Clark Mountain Range and at the western edge of the State Line Hills in the Clark Mountain BLM Grazing Allotment

Setting

Landform: Mountains and hills
Slope: 15 to 75 percent

Elevation: 800 to 1,600 meters
Annual air temperature: 52 to 68 degrees F
Average annual frost-free days: 160 to 320 days

Composition

Extent of the map unit in the survey area: 17 percent
Extent of the major components in the map unit:
Umberci and similar soils—75 percent
Rock outcrop—20 percent
Extent of the minor components in the map unit:
Birdspring and similar soils—5 percent

Soil Properties and Qualities

Umberci
Depth class: Very shallow
Drainage class: Somewhat excessively drained
Position on landform: Summits, shoulders, backslopes, and footslopes of hills and mountains
Parent material: Residuum and colluvium derived from limestone and dolomite
Texture of the surface layer: Sandy loam and fine sandy loam
Slope: 15 to 75 percent
Typical vegetation: Nevada jointfir, snakeweed, Utah mortonia, shadscale, and big galleta

Rock outcrop
Position on landform: Summits and shoulders of mountains and hills
Slope: 50 to 75 percent

Minor Components

- Birdspring soils on backslopes of hills and mountains

Use and Management

Major uses: Wildlife habitat

Wildlife habitat
Management concerns: The Umberci soils are poorly suited to habitat for tortoises and other burrowing animals because of the very shallow depth to bedrock.
Management measures: Included areas of minor soils and ecological sites that can provide suitable habitat should be protected.

All Landforms

9. NOTCOM

Soil data not complete

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown

on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Langwell gravelly loamy sand, 30 to 50 percent slopes, is a phase of the Langwell series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Peskah-Arizo association is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Playa is an example.

Table 1 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas. For component horizon data, see table 13—Physical Properties of Soils, table 14—Chemical Properties of Soils, and the "Soil Properties" section of this publication. For information about management, see the "Use and Management" section. For a detailed description of a typical soil, see the "Classification of the Soils" section.

3000—Copperworld association, 30 to 60 percent slopes

Map Unit Setting

General location: Clark Mountain BLM Grazing Allotment; metamorphic hills and mountains on the south side of the survey area and north of Mojave National Preserve
Major uses: Grazing and wildlife habitat
Major land resource area: 30—Mojave Desert
Landscape: Mountains
Elevation: 3,215 to 5,245 feet (980 to 1,600 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 55 to 64 degrees F (13 to 18 degrees C)
Frost-free period: 210 to 270 days

Map Unit Composition

Copperworld: 65 percent
Copperworld, cool: 15 percent
Minor components: 20 percent

Characteristics of the Copperworld Soil

Slope: 30 to 60 percent
Aspect: Northwest to east
Landform: Backslopes of mountains
Parent material: Residuum and colluvium derived from metamorphic rock
Typical vegetation: Blackbrush, big galleta, and creosote bush

Selected properties and qualities
pH of the surface layer: 7.2
Surface area covered by coarse fragments: 5 to 25 percent fine, subangular pebbles; 40 to 70 percent coarse, subangular pebbles; 5 to 20 percent subangular

cobbles; 2 to 5 percent subangular stones; and 0 to 5 percent subangular boulders
Depth to restrictive feature: 4 to 14 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About $^1/_2$ inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 8
Ecological site: R030XB029NV, Shallow Gravelly Loam 5–7” p.z.

Typical profile
A—0 to 1 inch; gravelly sandy loam
Bt—1 to 6 inches; gravelly sandy loam
R—6 to 16 inches; bedrock

Characteristics of the Copperworld, Cool, Soil

Slope: 30 to 60 percent
Aspect: Northwest to east
Landform: North facing backslopes of mountains
Parent material: Residuum and colluvium derived from metamorphic rock
Typical vegetation: Blackbrush, desert needlegrass, bush muhly, and big galleta

Selected properties and qualities
pH of the surface layer: 7.2
Surface area covered by coarse fragments: 5 to 25 percent fine, subangular pebbles; 40 to 70 percent coarse, subangular pebbles; 5 to 20 percent subangular cobbles; 2 to 5 percent subangular stones; and 0 to 5 percent subangular boulders
Depth to restrictive feature: 4 to 14 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About $^1/_2$ inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 8
Ecological site: R030XB057NV, Shallow Granitic Loam 5–7” p.z.

Typical profile
A—0 to 1 inch; gravelly sandy loam
Bt—1 to 6 inches; gravelly sandy loam
R—6 to 16 inches; bedrock

Minor Components

Rock outcrop
Extent of the component in the map unit: About 10 percent
Slope: 30 to 75 percent
Landform: Summits, shoulders, and backslopes of mountains
Ecological site: None assigned

Lithic Torriorthents and similar soils
Extent of the component in the map unit: About 7 percent
Slope: 30 to 75 percent
Landform: Hills
Typical vegetation: Virgin River encelia, catclaw acacia, buckhorn cholla, big galleta, and desert needlegrass
Ecological site: R030XB162CA, Shallow South Slope

Typic Torriorthents and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 30 to 60 percent
Landform: North facing backslopes of hills
Typical vegetation: Big galleta, Mojave buckwheat, bush muhly, miscellaneous shrubs, ephedra, desert needlegrass, and white bursage
Ecological site: R030XB060NV, Granitic North Slope 5–7” p.z.

Arizo, frequently flooded, and similar soils
Extent of the component in the map unit: About 1 percent
Slope: 4 to 15 percent
Landform: Drainageways
Typical vegetation: Purple sage, catclaw acacia, Mexican bladder sage, desert almond, burrobush, and California buckwheat
Ecological site: R030XB163CA, Sandy Wash

3241—Langwell gravelly loamy sand, 30 to 50 percent slopes

Map Unit Setting

General location: Clark Mountain BLM Grazing Allotment; metamorphic hills and mountains in the northwest corner of the allotment
Major uses: Wildlife habitat
Major land resource area: 30—Mojave Desert
Landscape: Hills
Elevation: 3,640 to 5,015 feet (1,110 to 1,530 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 55 to 63 degrees F (13 to 17 degrees C)
Frost-free period: 240 to 270 days

Map Unit Composition

Langwell: 85 percent
Minor components: 15 percent

Characteristics of the Langwell Soil

Slope: 30 to 50 percent
Aspect: Northeast to south
Landform: Backslopes of hills
Parent material: Residuum and colluvium derived from metamorphic rock
Typical vegetation: White bursage, creosote bush, littleleaf ratany, and big galleta

Selected properties and qualities
pH of the surface layer: 7.6
Surface area covered by coarse fragments: 60 to 75 percent coarse, subrounded pebbles; 17 to 23 percent subrounded cobbles; and 2 to 3 percent subrounded stones
Depth to restrictive feature: 4 to 6 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About $^{1}/_{2}$ inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 8
Ecological site: R030XB001NV, Limy Hill 5–7" p.z.

Typical profile
A—0 to 2 inches; gravelly loamy sand
C—2 to 5 inches; gravelly sandy loam
R—5 to 15 inches; bedrock

Minor Components

Rock outcrop
Extent of the component in the map unit: About 10 percent
Slope: 30 to 75 percent
Landform: Summits, shoulders, and sideslopes of hills
Ecological site: None assigned

Langwell, cool, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 15 to 30 percent
Landform: Summits of hills
Typical vegetation: Blackbrush, big galleta, miscellaneous shrubs, and creosote bush
Ecological site: R030XB029NV, Shallow Gravelly Loam 5–7" p.z.

Langwell, rarely flooded, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 8 to 15 percent
Landform: Footslopes of hills
Typical vegetation: Blackbrush, miscellaneous shrubs, desert needlegrass, bush muhly, and big galleta
Ecological site: R030XB057NV, Shallow Granitic Loam 5–7" p.z.

3260—Straycow-Newera-Rubble land association, 4 to 50 percent slopes

Map Unit Setting

General location: Eastern Mojave Desert near Piute Valley and New York Mountains
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Hills
Elevation: 2,720 to 4,490 feet (830 to 1,370 meters)
Mean annual precipitation: 5 to 7 inches (127 to 178 millimeters)
Mean annual air temperature: 57 to 66 degrees F (14 to 19 degrees C)
Frost-free period: 180 to 270 days

Map Unit Composition

Straycow: 40 percent
Newera: 35 percent
Rubble land: 10 percent
Minor components: 15 percent

Characteristics of the Straycow Soil

Slope: 15 to 50 percent
Aspect: All
Landform: Backslopes of hills
Parent material: Colluvium and/or residuum weathered from metamorphic rock
Typical vegetation: Blackbrush, big galleta, miscellaneous shrubs, Indian ricegrass, miscellaneous perennial forbs, miscellaneous perennial grasses, winterfat, and sphaeralcea

Selected properties and qualities
pH of the surface layer: 7.6
Surface area covered by coarse fragments: 25 to 45 percent coarse, subangular pebbles and 20 to 40 percent subangular cobbles
Depth to restrictive feature: 5 to 20 inches to paralithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.0 inches (very low)
Shrink-swell potential: Moderate (LEP 3 to less than 6)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB107NV, Coarse Gravelly Loam 5–7" p.z.

Typical profile
0 to 3 inches; very cobbly loam
3 to 19 inches; very gravelly clay loam
19 to 29 inches; bedrock

Characteristics of the Newera Soil

Slope: 4 to 15 percent
Aspect: All
Landform: Mountains and backslopes of hills
Parent material: Colluvium and/or residuum weathered from volcanic and metamorphic rock
Typical vegetation: Blackbrush, big galleta, miscellaneous shrubs, miscellaneous perennial forbs, miscellaneous perennial grasses, Indian ricegrass, creosote bush, and desert needlegrass

Selected properties and qualities
pH of the surface layer: 7.6
Surface area covered by coarse fragments: 25 to 45 percent coarse, subangular pebbles and 20 to 40 percent subangular cobbles
Depth to restrictive feature: 4 to 14 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 0.9 inch (very low)
Shrink-swell potential: Moderate (LEP 3 to less than 6)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB029NV, Shallow Gravelly Loam 5–7" p.z.

Typical profile
0 to 3 inches; very cobbly loam
3 to 12 inches; very gravelly sandy clay loam
12 to 22 inches; bedrock

Characteristics of the Rubble Land

Slope: 30 to 75 percent
Aspect: None noted
Landform: Backslopes of talus slopes
Parent material: Talus derived from basalt

Selected properties and qualities
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: 40 to 40 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Very high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.0 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Low

Current water table: None noted
Natural drainage class: Excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 8s
Ecological site: None assigned

Minor Components

Railroad and similar soils
Extent of the component in the map unit: About 7 percent
Slope: 30 to 75 percent
Landform: Steep basalt backslopes of lava flows
Typical vegetation: Big galleta, winterfat, Indian ricegrass, bush muhly, miscellaneous annual forbs, miscellaneous perennial forbs, miscellaneous shrubs, Nevada jointfir, desert needlegrass, and sphaeralcea
Ecological site: R030XB080NV, Stony Loam 5–7" p.z.

Rock outcrop
Extent of the component in the map unit: About 4 percent
Landform: Cliffs
Ecological site: None assigned

Haleburu family and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 8 to 30 percent
Landform: Backslopes of hills
Typical vegetation: Eastern Mojave buckwheat, white bursage, miscellaneous shrubs, big galleta, creosote bush, desert needlegrass, miscellaneous perennial forbs, Parish's goldeneye, bush muhly, ephedra, littleleaf ratany, and miscellaneous perennial grasses
Ecological site: R030XB070NV, Volcanic Hill 5–7" p.z.

Haleburu and similar soils
Extent of the component in the map unit: About 1 percent
Slope: 8 to 30 percent
Landform: Backslopes of hills
Typical vegetation: White bursage, creosote bush, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, littleleaf ratany, desert pepperweed, fluffgrass, Fremont's dalea, and miscellaneous perennial grasses
Ecological site: R030XB001NV, Limy Hill 5–7" p.z.

3261—Straycow-Highland association, 8 to 50 percent slopes

Map Unit Setting

General location: Eastern Mojave Desert near Piute Valley and New York Mountains
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Hills
Elevation: 3,605 to 4,920 feet (1,100 to 1,500 meters)
Mean annual precipitation: 5 to 7 inches (127 to 178 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 180 to 240 days

Map Unit Composition

Straycow: 45 percent
Highland: 25 percent
Straycow, moderately sloping: 15 percent
Minor components: 15 percent

Characteristics of the Straycow Soil

Slope: 15 to 50 percent
Aspect: All
Landform: Upper parts of backslopes of hills
Parent material: Colluvium and/or residuum weathered from metamorphic rock
Typical vegetation: Eastern Mojave buckwheat, big galleta, ephedra, miscellaneous shrubs, desert needlegrass, miscellaneous perennial forbs, littleleaf ratany, bush muhly, miscellaneous perennial grasses, and Parish's goldeneye

Selected properties and qualities
pH of the surface layer: 7.0
Surface area covered by coarse fragments: 55 to 75 percent coarse, subangular pebbles and 0 to 10 percent subangular cobbles
Depth to restrictive feature: 5 to 13 inches to paralithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 0.6 inch (very low)
Shrink-swell potential: Moderate (LEP 3 to less than 6)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB071NV, Volcanic Slope 7–9" p.z.

Typical profile
0 to 2 inches; extremely gravelly sandy loam
2 to 7 inches; very gravelly clay loam
7 to 20 inches; bedrock

Characteristics of the Highland Soil

Slope: 15 to 50 percent
Aspect: All
Landform: Lower parts of backslopes of hills
Parent material: Colluvium and/or residuum weathered from volcanic rock
Typical vegetation: Blackbrush, big galleta, miscellaneous shrubs, Indian ricegrass, miscellaneous perennial forbs, miscellaneous perennial grasses, winterfat, and sphaeralcea

Selected properties and qualities
pH of the surface layer: 7.6
Surface area covered by coarse fragments: 55 to 75 percent coarse, subangular

pebbles; 10 to 25 percent subangular cobbles; and 0 to 5 percent subangular stones
Depth to restrictive feature: 30 to 39 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.6 inches (low)
Shrink-swell potential: Moderate (LEP 3 to less than 6)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: C

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB107NV, Coarse Gravelly Loam 5–7” p.z.

Typical profile
0 to 3 inches; extremely gravelly loam
3 to 13 inches; very cobbly loam
13 to 26 inches; very gravelly loam
26 to 30 inches; very gravelly sandy loam
30 to 40 inches; bedrock

Characteristics of the Straycow, Moderately Sloping, Soil

Slope: 8 to 30 percent
Aspect: All
Landform: Lower parts of backslopes of hills
Parent material: Colluvium and/or residuum weathered from metamorphic rock
Typical vegetation: Blackbrush, big galleta, miscellaneous shrubs, Indian ricegrass, miscellaneous perennial forbs, miscellaneous perennial grasses, winterfat, and sphaeralcea

Selected properties and qualities
pH of the surface layer: 7.6
Surface area covered by coarse fragments: 55 to 75 percent coarse, subangular pebbles and 0 to 10 percent subangular cobbles
Depth to restrictive feature: 5 to 20 inches to paralithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.0 inches (very low)
Shrink-swell potential: Moderate (LEP 3 to less than 6)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB107NV, Coarse Gravelly Loam 5–7" p.z.

Typical profile
0 to 2 inches; very gravelly loam
2 to 19 inches; very gravelly clay loam
19 to 29 inches; bedrock

Minor Components

Lanip and similar soils
Extent of the component in the map unit: About 6 percent
Slope: 2 to 8 percent
Landform: Fan remnants
Typical vegetation: Big galleta, bush muhly, creosote bush, Indian ricegrass, Nevada jointfir, miscellaneous perennial forbs, miscellaneous perennial grasses, miscellaneous shrubs, littleleaf ratany, spiny hopsage, white bursage, and winterfat
Ecological site: R030XB043NV, Claypan 5–7" p.z.

Arizo and similar soils
Extent of the component in the map unit: About 4 percent
Slope: 2 to 8 percent
Landform: Drainageways
Typical vegetation: Hollyleaf bursage, miscellaneous shrubs, burrobrush, Anderson wolfberry, Eastern Mojave buckwheat, big galleta, bush muhly, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, Apache plume, Mexican bladdersage, desert almond, fourwing saltbush, and desert needlegrass
Ecological site: R030XB051NV, Upland Wash

Rock outcrop
Extent of the component in the map unit: About 3 percent
Landform: Summits of cliffs
Ecological site: None assigned

Haleburu and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 15 to 50 percent
Landform: Backslopes of hills at the lower elevations
Typical vegetation: White bursage, creosote bush, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, littleleaf ratany, desert pepperweed, fluffgrass, Fremont's dalea, and miscellaneous perennial grasses
Ecological site: R030XB001NV, Limy Hill 5–7" p.z.

3310—Birdspring-Zeheme-Rock outcrop association

Map Unit Setting

General location: None noted
Major land resource area: 30—Mojave Desert
Landscape: Mountains
Elevation: 2,995 to 5,495 feet (914 to 1,676 meters)
Mean annual precipitation: 5 to 8 inches (127 to 203 millimeters)
Mean annual air temperature: 57 to 64 degrees F (14 to 18 degrees C)
Frost-free period: 180 to 240 days

Map Unit Composition

Birdspring: 50 percent
Zeheme: 25 percent
Rock outcrop: 15 percent
Minor components: 10 percent

Characteristics of the Birdspring Soil

Slope: 30 to 50 percent
Aspect: All
Landform: Backslopes of mountains
Parent material: Colluvium and/or residuum weathered from limestone and dolomite
Typical vegetation: Blackbrush, shadscale, desert needlegrass, white bursage, ephedra, miscellaneous perennial forbs, and miscellaneous shrubs

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 20 to 40 percent coarse, subangular pebbles; 10 to 30 percent subangular cobbles; and 20 to 40 percent subangular stones
Depth to restrictive feature: 9 to 10 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 0.6 inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XA006NV, Shallow Limestone Slope 5–7” p.z.

Typical profile
0 to 3 inches; extremely stony loam
3 to 9 inches; very gravelly fine sandy loam
9 to 19 inches; bedrock

Characteristics of the Zeheme Soil

Slope: 30 to 75 percent
Aspect: All
Landform: Backslopes of mountains
Parent material: Colluvium and residuum weathered from limestone
Typical vegetation: Miscellaneous shrubs, blackbrush, desert needlegrass, Anderson wolfberry, Mexican cliffrose, Utah agave, arid needlegrass, creosote bush, ephedra, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, snakeweed, winterfat, and rayless goldenhead

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 25 to 45 percent coarse, subangular

pebbles; 10 to 20 percent subangular cobbles; and 15 to 25 percent subangular stones

Depth to restrictive feature: 7 to 14 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 1.0 inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB068NV, Limestone Hill 5–7" p.z.

Typical profile
0 to 4 inches; extremely stony fine sandy loam
4 to 13 inches; very gravelly fine sandy loam
13 to 23 inches; bedrock

Characteristics of the Rock Outcrop

Aspect: None noted
Landform: Cliffs

Minor Components

Potosi and similar soils
Extent of the component in the map unit: About 6 percent
Slope: 30 to 50 percent
Landform: Backslopes of mountains
Typical vegetation: Blackbrush, arid needlegrass, miscellaneous shrubs, desert needlegrass, fourwing saltbush, muttongrass, miscellaneous perennial forbs, spiny hopsage, miscellaneous perennial grasses, Stansbury cliffrose, and ephedra
Ecological site: R030XC008NV, Shallow Limestone Slope 7–9" p.z.

Birdspring and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 4 to 15 percent
Landform: Backslopes of mountains
Typical vegetation: Blackbrush, shadscale, desert needlegrass, white bursage, ephedra, miscellaneous perennial forbs, and miscellaneous shrubs
Ecological site: R030XA006NV, Shallow Limestone Slope 5–7" p.z.

Birdspring, steep, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 30 to 50 percent
Landform: Backslopes of mountains
Typical vegetation: Shadscale, white bursage, miscellaneous shrubs, Torrey's ephedra, big galleta, desert needlegrass, desert holly, and miscellaneous perennial forbs
Ecological site: R030XA002NV, Limestone Hill 5–7" p.z.

3320—Umberci-Rock outcrop association, 30 to 75 percent slopes

Map Unit Setting

General location: Clark Mountain BLM Grazing Allotment; limestone hills and mountains between Ivanpah Lake and Mesquite Lake
Major uses: Wildlife habitat and grazing
Major land resource area: 30—Mojave Desert
Landscape: Mountains
Elevation: 2,755 to 5,265 feet (840 to 1,605 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 55 to 68 degrees F (13 to 20 degrees C)
Frost-free period: 210 to 320 days

Map Unit Composition

Umberci: 65 percent
Rock outcrop: 20 percent
Minor components: 15 percent

Characteristics of the Umberci Soil

Slope: 30 to 75 percent
Aspect: West, south, and east
Landform: Backslopes of hills; sideslopes and summits of backslopes of mountains
Parent material: Colluvium and residuum weathered from limestone and dolomite
Typical vegetation: Broom snakeweed, Virgin River encelia, Utah mortonia, and California buckwheat

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 10 to 20 percent fine pebbles, 30 to 65 percent coarse pebbles, 2 to 40 percent cobbles, 2 to 20 percent stones, and 0 to 5 percent boulders
Depth to restrictive feature: 5 to 10 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 0.4 inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 8
Ecological site: R030XB160CA, Shallow Limestone Slope 5–7" p.z.

Typical profile
A—0 to 1/2 inch; gravelly sandy loam
Bkq—1/2 to 5 inches; very gravelly fine sandy loam
R—5 to 15 inches; bedrock

Characteristics of the Rock Outcrop

Slope: 50 to 75 percent
Aspect: None noted
Landform: Backslopes of mountains

Minor Components

Umberci, moist, and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 30 to 75 percent
Landform: Lower parts of sideslopes of mountains
Typical vegetation: White bursage, big galleta, winterfat, creosote bush, and spiny hopsage
Ecological site: R030XB102NV, Gravelly Loam 5–7" p.z.

Colosseum and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 4 to 15 percent
Landform: Drainageways
Typical vegetation: White brittlebush, catclaw acacia, burrobush, and Anderson wolfberry
Ecological site: R030XB159CA, Broad Gravelly Wash

Umberci, cool, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 30 to 60 percent
Landform: North facing sideslopes of mountains
Typical vegetation: Shadscale, Indian ricegrass, desert needlegrass, and ephedra
Ecological site: R030XB002NV, Loamy Hill 5–7" p.z.

Umberci, warm, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 30 to 75 percent
Landform: Footslopes of hills
Typical vegetation: White bursage, creosote bush, littleleaf ratany, and big galleta
Ecological site: R030XB002NV, Loamy Hill 5–7" p.z.

Rubble land
Extent of the component in the map unit: About 1 percent
Slope: 30 to 75 percent
Landform: Backslopes of mountains
Ecological site: None assigned

3412—Haleburu association

Map Unit Setting

General location: None noted
Major land resource area: 30—Mojave Desert
Landscape: Hills
Elevation: 2,400 to 3,395 feet (732 to 1,036 meters)
Mean annual precipitation: 4 to 7 inches (102 to 178 millimeters)
Mean annual air temperature: 61 to 70 degrees F (16 to 21 degrees C)
Frost-free period: 240 to 300 days

Map Unit Composition

Haleburu: 60 percent
Haleburu, dry: 25 percent
Minor components: 15 percent

Characteristics of the Haleburu Soil

Slope: 15 to 50 percent
Aspect: All
Landform: Backslopes of hills
Parent material: Colluvium and/or residuum weathered from volcanic rock
Typical vegetation: White bursage, creosote bush, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, littleleaf ratany, desert pepperweed, fluffgrass, Fremont's dalea, and miscellaneous perennial grasses

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 60 to 85 percent coarse, subangular pebbles; 5 to 15 percent subangular cobbles; and 0 to 10 percent subangular stones
Depth to restrictive feature: 4 to 14 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 0.6 inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB001NV, Limy Hill 5–7" p.z.

Typical profile
0 to 2 inches; extremely gravelly sandy loam
2 to 11 inches; very gravelly sandy loam
11 to 21 inches; bedrock

Characteristics of the Haleburu, Dry, Soil

Slope: 4 to 15 percent
Aspect: All
Landform: Backslopes of hills
Parent material: Colluvium and/or residuum weathered from volcanic rock
Typical vegetation: Creosote bush, white bursage, miscellaneous annual forbs, miscellaneous shrubs, fluffgrass, miscellaneous perennial forbs, and miscellaneous perennial grasses

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 60 to 85 percent coarse, subangular pebbles; 5 to 15 percent subangular cobbles; and 0 to 10 percent subangular stones

Depth to restrictive feature: 4 to 14 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 0.6 inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB017NV, Limy Hill 3–5" p.z.

Typical profile
0 to 2 inches; extremely gravelly sandy loam
2 to 11 inches; very gravelly sandy loam
11 to 21 inches; bedrock

Minor Components

Newera family and similar soils
Extent of the component in the map unit: About 9 percent
Slope: 15 to 30 percent
Landform: Backslopes of mountains
Typical vegetation: Eastern Mojave buckwheat, big galleta, ephedra, desert needlegrass, bush muhly, miscellaneous perennial forbs, miscellaneous shrubs, miscellaneous perennial grasses, littleleaf ratany, and Parish's goldeneye
Ecological site: R030XB071NV, Volcanic Slope 7–9" p.z.

Haleburu and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 15 to 50 percent
Landform: Backslopes of hills
Typical vegetation: Creosote bush, miscellaneous perennial forbs, miscellaneous shrubs, big galleta, fluffgrass, miscellaneous annual forbs, miscellaneous annual grasses, and white bursage
Ecological site: R030XB084NV, Eroded Slope

Nipton and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 15 to 30 percent
Landform: Summits of hills
Typical vegetation: Eastern Mojave buckwheat, white bursage, miscellaneous shrubs, big galleta, creosote bush, desert needlegrass, miscellaneous perennial forbs, Parish's goldeneye, bush muhly, ephedra, littleleaf ratany, and miscellaneous perennial grasses
Ecological site: R030XB070NV, Volcanic Hill 5–7" p.z.

Rock outcrop
Extent of the component in the map unit: About 2 percent
Landform: Cliffs
Ecological site: None assigned

3420—Hartpeak-Highland association, 15 to 50 percent slopes

Map Unit Setting

General location: Eastern Mojave Desert near Piute Valley and New York Mountains, Crescent Peak BLM Grazing Allotment
Major uses: Grazing and wildlife habitat
Major land resource area: 30—Mojave Desert
Landscape: Hills
Elevation: 4,100 to 5,495 feet (1,250 to 1,675 meters)
Mean annual precipitation: 5 to 9 inches (127 to 230 millimeters)
Mean annual air temperature: 55 to 63 degrees F (13 to 17 degrees C)
Frost-free period: 180 to 240 days

Map Unit Composition

Hartpeak: 50 percent
Highland, moist: 35 percent
Minor components: 15 percent

Characteristics of the Hartpeak Soil

Slope: 15 to 50 percent
Aspect: All
Landform: Upper parts of backslopes of hills
Parent material: Colluvium and/or residuum weathered from volcanic rock
Typical vegetation: Galleta, banana yucca, Anderson wolfberry, desert needlegrass, Joshua tree, buckhorn cholla, and Mojave yucca

Selected properties and qualities
pH of the surface layer: 7.6
Surface area covered by coarse fragments: 40 to 60 percent coarse, subangular pebbles; 15 to 30 percent subangular cobbles; 0 to 5 percent subangular stones; and 0 to 3 percent subangular boulders
Depth to restrictive feature: 20 to 30 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 1.9 inches (very low)
Shrink-swell potential: Moderate (LEP 3 to less than 6)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: C

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9" p.z.

Typical profile
A—0 to 2 inches; extremely cobbly loam
Bw—2 to 6 inches; very cobbly loam
Btk—6 to 22 inches; very cobbly clay loam
R—22 to 31 inches; bedrock

Characteristics of the Highland, Moist, Soil

Slope: 15 to 50 percent
Aspect: All
Landform: Lower parts of backslopes of hills
Parent material: Colluvium and/or residuum weathered from volcanic rock
Typical vegetation: Galleta, Mojave yucca, buckhorn cholla, creosote bush, desert needlegrass, bladdersage, and bush encelia

Selected properties and qualities
pH of the surface layer: 7.6
Surface area covered by coarse fragments: 55 to 75 percent coarse, subangular pebbles; 15 to 25 percent subangular cobbles; and 0 to 5 percent subangular stones
Depth to restrictive feature: 30 to 39 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.4 inches (very low)
Shrink-swell potential: Moderate (LEP 3 to less than 6)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: High
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: C

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9” p.z.

Typical profile
A—0 to 2 inches; extremely gravelly loam
Bk—2 to 14 inches; very gravelly sandy loam
2Btk—14 to 30 inches; very gravelly loam
2R—30 to 39 inches; bedrock

Minor Components

Rock outcrop
Extent of the component in the map unit: About 4 percent
Landform: Summits of cliffs
Ecological site: None assigned

Straycow and similar soils
Extent of the component in the map unit: About 4 percent
Slope: 15 to 50 percent
Landform: Upper parts of backslopes of hills
Typical vegetation: Eastern Mojave buckwheat, big galleta, ephedra, miscellaneous shrubs, desert needlegrass, miscellaneous perennial forbs, littleleaf ratany, bush muhly, miscellaneous perennial grasses, and Parish’s goldeneye
Ecological site: R030XB071NV, Volcanic Slope 7–9” p.z.

Hoppswell and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 2 to 8 percent
Landform: Fan remnants

Typical vegetation: Blackbrush, black grama, Indian ricegrass, big galleta, desert needlegrass, miscellaneous perennial forbs, miscellaneous shrubs, Nevada jointfir, galleta, and miscellaneous perennial grasses
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9" p.z.

Arizo, cool, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 8 percent
Landform: Drainageways
Typical vegetation: Hollyleaf bursage, miscellaneous shrubs, burrobrush, Anderson wolfberry, Mojave buckwheat, big galleta, bush muhly, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, Apache plume, Mexican bladdersage, desert almond, fourwing saltbush, and desert needlegrass
Ecological site: R030XB051NV, Upland Wash

Lemitar and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 8 percent
Landform: Shoulders of hills
Typical vegetation: Snakeweed, big galleta, banana yucca, buckhorn cholla, cheatgrass, littleleaf ratany, and desert needlegrass
Ecological site: R030XB015NV, Shallow Gravelly Slope 7–9" p.z.

3520—Arizo loamy sand, 2 to 8 percent slopes

Map Unit Setting

General location: Desert Area, BLM Grazing Allotments; fan piedmonts between Clark Mountain and Interstate 15
Major uses: Grazing and wildlife habitat
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 2,620 to 3,935 feet (800 to 1,200 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 63 to 68 degrees F (17 to 20 degrees C)
Frost-free period: 280 to 320 days

Map Unit Composition

Arizo loamy sand: 85 percent
Minor components: 15 percent

Characteristics of the Arizo Soil

Slope: 2 to 8 percent
Aspect: Northwest to east
Landform: Backslopes of fan aprons
Parent material: Alluvium derived from metamorphic and sedimentary rock
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and white ratany

Selected properties and qualities
pH of the surface layer: 7.8
Surface area covered by coarse fragments: 20 to 60 percent fine pebbles, 20 to 80 percent coarse pebbles, and 1 to 5 percent cobbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High

Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.4 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Very rare
Present ponding: None
Surface runoff: Very low
Current water table: None noted
Natural drainage class: Excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XB005NV, Limy 5–7" p.z.

Typical profile
A—0 to 1 inch; loamy sand
Bkq1—1 to 56 inches; very gravelly sand
Bkq2—56 to 61 inches; coarse sand

Minor Components

Arizo, dry, and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 2 to 4 percent
Landform: Fan apron
Typical vegetation: White bursage, creosote bush, Mojave yucca, and white ratany
Ecological site: R030XB156CA, Limy 5–7" p.z. (low production)

Arizo, frequently flooded, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 4 to 8 percent
Landform: Drainageways
Typical vegetation: Virgin River encelia, catclaw acacia, burrobush, and Anderson wolfberry
Ecological site: R030XB159CA, Broad Gravelly Wash

Daisy and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 4 to 8 percent
Landform: Fan aprons and fan remnants
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and white ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

Durinodic Calciargids and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 4 to 8 percent
Landform: Fan remnants
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and white ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

Typic Argidurids and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 4 to 8 percent

Landform: Fan remnants
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and white ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

3640—Tonopah-Arizo association, 2 to 8 percent slopes

Map Unit Setting

General location: None noted
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 1,705 to 4,360 feet (520 to 1,330 meters)
Mean annual precipitation: 5 to 7 inches (127 to 178 millimeters)
Mean annual air temperature: 57 to 70 degrees F (14 to 21 degrees C)
Frost-free period: 180 to 300 days

Map Unit Composition

Tonopah: 45 percent
Arizo: 40 percent
Minor components: 15 percent

Characteristics of the Tonopah Soil

Slope: 2 to 8 percent
Aspect: All
Landform: Fan remnants
Parent material: Alluvium derived from mixed sources
Typical vegetation: White bursage, creosote bush, miscellaneous annual forbs, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, and Nevada jointfir

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 35 to 60 percent coarse, subrounded pebbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.6 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Very rare
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB005NV, Limy 5–7" p.z.

Typical profile
0 to 1 inch; extremely gravelly sandy loam
1 to 9 inches; very gravelly sandy loam
9 to 60 inches; extremely gravelly sand

Characteristics of the Arizo Soil

Slope: 2 to 8 percent
Aspect: All
Landform: Fan aprons
Parent material: Alluvium derived from mixed sources
Typical vegetation: White bursage, creosote bush, miscellaneous annual forbs, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, and Nevada jointfir

Selected properties and qualities
pH of the surface layer: 8.0
Surface area covered by coarse fragments: 35 to 50 percent coarse, subrounded pebbles and 3 to 15 percent subrounded cobbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 3.0 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Very rare
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB005NV, Limy 5–7" p.z.

Typical profile
0 to 2 inches; very gravelly loamy sand
2 to 6 inches; sand
6 to 60 inches; stratified very gravelly coarse sand to extremely gravelly sand

Minor Components

Typic Haplodurids and similar soils
Extent of the component in the map unit: About 8 percent
Slope: 2 to 8 percent
Landform: Fan remnants
Typical vegetation: White bursage, creosote bush, miscellaneous annual forbs, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, and Nevada jointfir
Ecological site: R030XB005NV, Limy 5–7" p.z.

Arizo and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 2 to 8 percent

Landform: Drainageways
Typical vegetation: Creosote bush, white bursage, baccharis, big galleta, miscellaneous perennial forbs, miscellaneous shrubs, miscellaneous perennial grasses, burrobrush, Eastern Mojave buckwheat, Nevada jointfir, catclaw acacia, and desert willow
Ecological site: R030XB028NV, Valley Wash

Typic Torriorthents and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 4 percent
Landform: Fan skirts
Typical vegetation: White bursage, creosote bush, miscellaneous annual forbs, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, and Nevada jointfir
Ecological site: R030XB005NV, Limy 5–7" p.z.

3641—Tonopah fine sandy loam, 2 to 8 percent slopes, rarely flooded

Map Unit Setting

General location: Mojave Desert, Southeastern California, Clark Mountain BLM Grazing Allotment
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 3,525 to 5,000 feet (1,075 to 1,525 meters)
Mean annual precipitation: 5 to 7 inches (127 to 178 millimeters)
Mean annual air temperature: 63 to 69 degrees F (17 to 21 degrees C)
Frost-free period: 240 to 300 days

Map Unit Composition

Tonopah, rarely flooded: 80 percent
Minor components: 20 percent

Characteristics of the Tonopah, Rarely Flooded, Soil

Slope: 2 to 8 percent
Aspect: Westerly
Landform: Backslopes of fan aprons
Parent material: Alluvium derived from mixed sources
Typical vegetation: Big galleta, creosote bush, white bursage, Joshua tree, and winterfat

Selected properties and qualities
pH of the surface layer: 8.0
Surface area covered by coarse fragments: 25 to 40 percent fine pebbles, 45 to 55 percent coarse pebbles, and 0 to 1 percent cobbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 3.2 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Rare

Present ponding: None
Surface runoff: Very low
Current water table: None noted
Natural drainage class: Excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB043NV, Claypan 5–7" p.z.

Typical profile
A—0 to 2 inches; fine sandy loam
Bk—2 to 18 inches; gravelly fine sandy loam
Bkq—18 to 39 inches; very gravelly loamy sand

Minor Components

Arizo, steep, and similar soils
Extent of the component in the map unit: About 8 percent
Slope: 8 to 15 percent
Landform: Steep fan remnants
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and littleleaf ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

Arizo, frequently flooded, and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 2 to 8 percent
Landform: Drainageways
Typical vegetation: Purple sage, catclaw acacia, Stansbury cliffrose, desert almond, and burrobush
Ecological site: R030XB163CA, Sandy Wash

Owlshead and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 2 to 15 percent
Landform: Fan remnants
Typical vegetation: Blackbrush, creosote bush, desert needlegrass, California buckwheat, and Nevada jointfir
Ecological site: R030XB143CA, Shallow Granitic Loam 5–7" p.z.

Arizo, very rarely flooded, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 4 percent
Landform: Fan aprons
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and littleleaf ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

Tonopah and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 4 to 15 percent
Landform: Steep inset fans
Typical vegetation: Big galleta, bush muhly, creosote bush, spiny hopsage, winterfat, and white bursage
Ecological site: R030XB043NV, Claypan 5–7" p.z.

3650—Weiser association, 2 to 8 percent slopes

Map Unit Setting

General location: Mojave Desert, Southeastern California and Southwestern Nevada, Sandy Valley area
Major uses: Recreation, wildlife habitat, and rangeland
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 2,590 to 4,590 feet (790 to 1,400 meters)
Mean annual precipitation: 4 to 7 inches (100 to 178 millimeters)
Mean annual air temperature: 61 to 68 degrees F (16 to 20 degrees C)
Frost-free period: 210 to 300 days

Map Unit Composition

Weiser, rarely flooded: 45 percent
Weiser: 40 percent
Minor components: 15 percent

Characteristics of the Weiser, Rarely Flooded, Soil

Slope: 2 to 8 percent
Aspect: South to northwest
Landform: Summits of inset fans
Parent material: Alluvium derived from limestone and dolomite
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and littleleaf ratany

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 10 to 30 percent fine pebbles, 30 to 80 percent coarse pebbles, and 1 to 5 percent cobbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.4 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Rare
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB005NV, Limy 5–7" p.z.

Typical profile
A—0 to 1 inch; very gravelly fine sandy loam
Bkq—1 to 60 inches; extremely gravelly sandy loam

Characteristics of the Weiser Soil

Slope: 2 to 4 percent
Aspect: South to northwest

Landform: Summits of fan remnants
Parent material: Alluvium derived from limestone and dolomite
Typical vegetation: White bursage, shadscale, creosote bush, big galleta, and littleleaf ratany

Selected properties and qualities
pH of the surface layer: 8.0
Surface area covered by coarse fragments: 10 to 15 percent fine pebbles, 60 to 85 percent coarse pebbles, and 5 to 15 percent cobbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.4 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB124CA, Gravelly Loam 3–5" p.z.

Typical profile
A—0 to 6 inches; gravelly loam
Bkq—6 to 60 inches; extremely gravelly sandy loam

Minor Components

Sodic Haplocalcids and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 2 to 4 percent
Landform: Fan skirts
Typical vegetation: Cattle saltbush, creosote bush, white bursage, and Indian ricegrass
Ecological site: R030XY046NV, Outwash Plain

Colosseum, occasionally flooded, and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 2 to 8 percent
Landform: Drainageways
Typical vegetation: Virgin River encelia, catclaw acacia, burrobrush, and Anderson wolfberry
Ecological site: R030XB159CA, Broad Gravelly Wash

Colosseum, very rarely flooded, and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 2 to 8 percent
Landform: Fan aprons
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and littleleaf ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

3660—Colosseum association, 2 to 4 percent slopes

Map Unit Setting

General location: Mojave Desert, Southeastern California, Clark Mountain BLM Grazing Allotment
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 2,620 to 3,440 feet (799 to 1,050 meters)
Mean annual precipitation: 5 to 7 inches (125 to 175 millimeters)
Mean annual air temperature: 63 to 68 degrees F (17 to 20 degrees C)
Frost-free period: 280 to 320 days

Map Unit Composition

Colosseum, rarely flooded: 65 percent
Colosseum, very rarely flooded: 20 percent
Minor components: 15 percent

Characteristics of the Colosseum, Rarely Flooded, Soil

Slope: 2 to 4 percent
Aspect: West to southeast
Landform: Fan aprons
Parent material: Alluvium derived from limestone and dolomite
Typical vegetation: White bursage, creosote bush, Mojave yucca, and white ratany

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 5 to 20 percent fine pebbles, 65 to 70 percent coarse pebbles, and 0 to 7 percent cobbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.6 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Rare
Present ponding: None
Surface runoff: Negligible
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB156CA, Limy 5–7” p.z. (low production)

Typical profile
A—0 to 1 inch; fine sandy loam
Bk—1 to 4 inches; very gravelly loamy sand
Bkq—4 to 45 inches; extremely gravelly loamy sand
2Bkq—45 to 59 inches; very gravelly fine sandy loam

Characteristics of the Colosseum, Very Rarely Flooded, Soil

Slope: 2 to 4 percent
Aspect: West to southeast
Landform: Channeled fan aprons
Parent material: Alluvium derived from limestone and dolomite
Typical vegetation: Creosote bush, white bursage, white ratany, and Mojave yucca

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 5 to 20 percent fine pebbles, 65 to 70 percent coarse pebbles, and 0 to 7 percent cobbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.6 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Very rare
Present ponding: None
Surface runoff: Negligible
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB019NV, Limy 3–5" p.z.

Typical profile
A—0 to 1 inch; gravelly fine sandy loam
Bk—1 to 4 inches; very gravelly loamy sand
Bkq—4 to 45 inches; extremely gravelly loamy sand
2Bkq—45 to 59 inches; very gravelly fine sandy loam

Minor Components

Weiser, cool, and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 4 to 8 percent
Landform: Fan remnants
Typical vegetation: Spiny menodora, shadscale, white bursage, and creosote bush
Ecological site: R030XB031NV, Shallow Limy 5–7" p.z.

Colosseum, occasionally flooded, and similar soils
Extent of the component in the map unit: About 4 percent
Slope: 2 to 4 percent
Landform: Drainageways
Typical vegetation: Virgin River encelia, catclaw acacia, burrobrush, and Anderson wolfberry
Ecological site: R030XB159CA, Broad Gravelly Wash

Sodic Haplocalcids and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 0 to 2 percent
Landform: Fan skirts

Typical vegetation: Cattle saltbush, creosote bush, white bursage, and Indian ricegrass
Ecological site: R030XY046NV, Outwash Plain

Weiser and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 4 to 8 percent
Landform: Fan remnants
Typical vegetation: White bursage, Fremont's dalea, Nevada jointfir, Mojave yucca, and creosote bush
Ecological site: R030XB133NV, Gravelly Inset Fan 5–7" p.z.

4122—Popups sandy loam, 4 to 30 percent slopes

Map Unit Setting

General location: Clark Mountain BLM Grazing Allotment; fan remnants on the west side of the soil survey area, abutting Mojave National Preserve
Major uses: Wildlife habitat and grazing
Major land resource area: 30—Mojave Desert
Landscape: Piedmont slopes
Elevation: 3,375 to 3,870 feet (1,030 to 1,180 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 61 to 66 degrees F (16 to 19 degrees C)
Frost-free period: 210 to 270 days

Map Unit Composition

Popups: 75 percent
Minor components: 25 percent

Characteristics of the Popups Soil

Slope: 4 to 30 percent
Aspect: North to east
Landform: Summits of fan remnants and backslopes of fan remnants
Parent material: Alluvium derived from metamorphic rock
Typical vegetation: Blackbrush, creosote bush, desert needlegrass, California buckwheat, and Nevada jointfir

Selected properties and qualities
pH of the surface layer: 8.0
Surface area covered by coarse fragments: 5 to 20 percent fine pebbles, 40 to 60 percent coarse pebbles, 0 to 10 percent cobbles, and 0 to 2 percent stones
Depth to restrictive feature: 33 to 39 inches to duripan
Slowest rate of saturated hydraulic conductivity in the soil: Low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 3.5 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XB143CA, Shallow Granitic Loam 5–7” p.z.

Typical profile
A—0 to 1 inch; sandy loam
Bt—1 to 4 inches; sandy loam
Btk1—4 to 10 inches; gravelly sandy clay loam
Btk2—10 to 39 inches; gravelly coarse sandy loam
Bkqm—39 to 61 inches; duripan

Minor Components

Arizo and similar soils
Extent of the component in the map unit: About 10 percent
Slope: 2 to 8 percent
Landform: Inset fans
Typical vegetation: Spiny menodora, creosote bush, white bursage, littleleaf ratany, and turpentinebroom
Ecological site: R030XB157CA, Gravelly Inset Fan 5–7” p.z.

Typic Haplargids and similar soils
Extent of the component in the map unit: About 10 percent
Slope: 4 to 15 percent
Landform: Summits and sideslopes of fan remnants
Typical vegetation: Blackbrush, big galleta, miscellaneous shrubs, and creosote bush
Ecological site: R030XB143CA, Shallow Granitic Loam 5–7” p.z.

Arizo, occasionally flooded, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 2 to 4 percent
Landform: Drainageways
Typical vegetation: Virgin River encelia, catclaw acacia, burrobush, and Anderson wolfberry
Ecological site: R030XB159CA, Broad Gravelly Wash

Durinodic Haplargids and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 8 percent
Landform: Summits and sideslopes of fan remnants
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and white ratany
Ecological site: R030XB005NV, Limy 5–7” p.z.

4180—Peskah-Arizo association

Map Unit Setting

General location: None noted
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 2,490 to 4,655 feet (760 to 1,420 meters)
Mean annual precipitation: 5 to 7 inches (127 to 178 millimeters)
Mean annual air temperature: 57 to 70 degrees F (14 to 21 degrees C)
Frost-free period: 180 to 270 days

Map Unit Composition

Peskah: 50 percent
Arizo: 35 percent
Minor components: 15 percent

Characteristics of the Peskah Soil

Slope: 4 to 8 percent
Aspect: All
Landform: Fan remnants
Parent material: Alluvium derived from volcanic rock
Typical vegetation: Big galleta, white bursage, miscellaneous perennial grasses, miscellaneous shrubs, bush muhly, desert globemallow, littleleaf ratany, Nevada jointfir, and miscellaneous perennial forbs

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 60 to 80 percent coarse, subrounded pebbles; 0 to 10 percent subrounded cobbles; and 0 to 5 percent subrounded stones
Depth to restrictive feature: 39 to 60 inches to duripan
Slowest rate of saturated hydraulic conductivity in the soil: Low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.3 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Medium
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: C

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB100NV, Gravelly Claypan 5–7” p.z.

Typical profile
0 to 1 inch; extremely gravelly fine sandy loam
1 to 4 inches; gravelly sandy loam
4 to 8 inches; gravelly sandy clay loam
8 to 15 inches; very gravelly sandy clay loam
15 to 43 inches; stratified very gravelly sandy loam to extremely gravelly coarse sand
43 to 60 inches; cemented material

Characteristics of the Arizo Soil

Slope: 2 to 8 percent
Aspect: All
Landform: Fan aprons
Parent material: Mixed alluvium
Typical vegetation: White bursage, creosote bush, miscellaneous annual forbs, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, and Nevada jointfir

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 55 to 70 percent coarse, subrounded pebbles; 0 to 5 percent subrounded cobbles; and 0 to 3 percent subrounded stones
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 2.4 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Very rare
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB005NV, Limy 5–7” p.z.

Typical profile
0 to 6 inches; extremely gravelly sandy loam
6 to 60 inches; stratified extremely gravelly loamy sand to cobbly coarse sand

Minor Components

Arizo and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 4 to 8 percent
Landform: Drainageways
Typical vegetation: Creosote bush, white bursage, baccharis, big galleta, miscellaneous perennial forbs, miscellaneous shrubs, miscellaneous perennial grasses, burrobrush, Eastern Mojave buckwheat, Nevada jointfir, catclaw acacia, and desert willow
Ecological site: R030XB028NV, Valley Wash

Typic Haplargids and similar soils
Extent of the component in the map unit: About 4 percent
Slope: 2 to 4 percent
Landform: Summits of fan remnants
Typical vegetation: White bursage, creosote bush, miscellaneous annual forbs, miscellaneous shrubs, big galleta, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, and Nevada jointfir
Ecological site: R030XB005NV, Limy 5–7” p.z.

Hoppswell and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 4 to 15 percent
Landform: Fan remnants
Typical vegetation: Blackbrush, black grama, Indian ricegrass, big galleta, desert needlegrass, miscellaneous perennial forbs, miscellaneous shrubs, Nevada jointfir, galleta, and miscellaneous perennial grasses
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9” p.z.

Riverwash
Extent of the component in the map unit: About 3 percent
Slope: 2 to 8 percent
Landform: Channels
Ecological site: None assigned

4190—Weiser sandy loam, 2 to 8 percent slopes

Map Unit Setting

General location: Clark Mountain BLM Grazing Allotment; fan remnants on the south side of Stateline Pass
Major uses: Wildlife habitat and grazing
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 3,015 to 3,605 feet (920 to 1,100 meters)
Mean annual precipitation: 3 to 7 inches (75 to 175 millimeters)
Mean annual air temperature: 63 to 68 degrees F (17 to 20 degrees C)
Frost-free period: 240 to 300 days

Map Unit Composition

Weiser, cool: 85 percent
Minor components: 15 percent

Characteristics of the Weiser, Cool, Soil

Slope: 2 to 8 percent
Aspect: Northeast to south
Landform: Summits of fan remnants
Parent material: Alluvium derived from limestone and dolomite
Typical vegetation: White bursage, blackbrush, shadscale, creosote bush, and spiny menodora

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 10 to 60 percent fine pebbles, 20 to 80 percent coarse pebbles, and 3 to 20 percent cobbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 4.1 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XB158CA, Ballena Summit

Typical profile

A—0 to 2 inches; sandy loam
Bkq1—2 to 27 inches; extremely gravelly sandy loam
Bkq2—27 to 45 inches; extremely gravelly sandy loam
Ck—45 to 61 inches; extremely gravelly loamy fine sand

Minor Components

Weiser, warm, and similar soils
Extent of the component in the map unit: About 8 percent
Slope: 2 to 8 percent
Landform: Summits and sideslopes of fan remnants
Typical vegetation: White bursage, creosote bush, Nevada jointfir, big galleta, and white ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

Colosseum, occasionally flooded, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 2 to 8 percent
Landform: Drainageways and inset fans
Typical vegetation: Virgin River encelia, catclaw acacia, burrobrush, and Anderson wolfberry
Ecological site: R030XB159CA, Broad Gravelly Wash

Weiser, steep, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 8 to 30 percent
Landform: Sideslopes of ballenas
Typical vegetation: White bursage, blackbrush, shadscale, creosote bush, and spiny menodora
Ecological site: R030XB158CA, Ballena Summit

Typic Torriorthents and similar soils
Extent of the component in the map unit: About 1 percent
Slope: 2 to 8 percent
Landform: Inset fans
Typical vegetation: White bursage, creosote bush, big galleta, spiny menodora, and white ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

4200—Owlshead loam, 2 to 30 percent slopes

Map Unit Setting

General location: Mojave Desert, Southeastern California, Clark Mountain BLM Grazing Allotment
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 3,820 to 4,720 feet (1,165 to 1,440 meters)
Mean annual precipitation: 3 to 7 inches (75 to 178 millimeters)
Mean annual air temperature: 55 to 63 degrees F (13 to 17 degrees C)
Frost-free period: 240 to 300 days

Map Unit Composition

Owlshead: 95 percent
Minor components: 5 percent

Characteristics of the Owlshead Soil

Slope: 2 to 30 percent
Aspect: Southwest to northwest
Landform: Backslopes of fan remnants and summits of fan remnants
Parent material: Alluvium derived from mixed sources
Typical vegetation: Blackbrush, miscellaneous shrubs, creosote bush, white bursage, Joshua tree, and miscellaneous perennial forbs

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 30 to 35 percent fine pebbles, 40 to 60 percent coarse pebbles, and 1 to 5 percent cobbles
Depth to restrictive feature: 4 to 14 inches to duripan
Slowest rate of saturated hydraulic conductivity in the soil: Low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 1.3 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Medium
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: C

California land use interpretive groups
Land capability classification, nonirrigated: 8
Ecological site: R030XB143CA, Shallow Granitic Loam 5–7” p.z.

Typical profile
A—0 to 2 inches; loam
Bkq1—2 to 6 inches; gravelly fine sandy loam
Bkq2—6 to 13 inches; very gravelly fine sandy loam
Bkqm—13 to 41 inches; cemented material
Ckq—41 to 59 inches; very gravelly sand

Minor Components

Arizo, frequently flooded, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 2 to 8 percent
Landform: Drainageways
Typical vegetation: Purple sage, catclaw acacia, Stansbury cliffrose, desert almond, and burrobush
Ecological site: R030XB163CA, Sandy Wash

Tonopah and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 8 percent
Landform: Inset fans
Typical vegetation: Big galleta, bush muhly, creosote bush, spiny hopsage, winterfat, and white bursage
Ecological site: R030XB043NV, Claypan 5–7” p.z.

4210—Ustidur extremely gravelly sandy loam, 8 to 30 percent slopes

Map Unit Setting

General location: Eastern Mojave Desert near Piute Valley and New York Mountains, Crescent Peak BLM Grazing Allotment
Major uses: Grazing and wildlife habitat
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 4,000 to 5,245 feet (1,220 to 1,600 meters)
Mean annual precipitation: 7 to 9 inches (178 to 229 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 180 to 240 days

Map Unit Composition

Ustidur: 85 percent
Minor components: 15 percent

Characteristics of the Ustidur Soil

Slope: 8 to 30 percent
Aspect: North to southeast
Landform: Backslopes of partial ballenas
Parent material: Alluvium derived from metamorphic rock
Typical vegetation: Littleleaf ratany, galleta, creosote bush, Mojave yucca, Joshua tree, black grama, banana yucca, desert needlegrass, and Nevada jointfir

Selected properties and qualities
pH of the surface layer: 8.4
Surface area covered by coarse fragments: 60 to 80 percent coarse, subrounded pebbles; 0 to 10 percent subrounded cobbles; and 0 to 3 percent subrounded stones
Depth to restrictive feature: 4 to 14 inches to duripan
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 0.6 inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: High
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB015NV, Shallow Gravelly Slope 7–9” p.z.

Typical profile
A—0 to 2 inches; extremely gravelly sandy loam
Bk—2 to 10 inches; very gravelly sandy loam
2Bkqm—10 to 38 inches; cemented material
2Bkq—38 to 60 inches; extremely gravelly sandy loam

Minor Components

Minehart and similar soils
Extent of the component in the map unit: About 9 percent
Slope: 2 to 8 percent
Landform: Summits of fan remnants
Typical vegetation: Galleta, Cooper's goldenbush, bush muhly, black grama, snakeweed, spiny hopsage, banana yucca, buckhorn cholla, and winterfat
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9" p.z.

Arizo, cool, and similar soils
Extent of the component in the map unit: About 4 percent
Slope: 2 to 8 percent
Landform: Drainageways
Typical vegetation: Hollyleaf bursage, miscellaneous shrubs, burrobrush, Anderson wolfberry, Eastern Mojave buckwheat, big galleta, bush muhly, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, Apache plume, Mexican bladdersage, desert almond, fourwing saltbush, and desert needlegrass
Ecological site: R030XB051NV, Upland Wash

Hartpeak and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 15 to 50 percent
Landform: Upper parts of backslopes of hills
Typical vegetation: Galleta, banana yucca, Anderson wolfberry, desert needlegrass, Mojave yucca, and buckhorn cholla
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9" p.z.

4220—Minehart gravelly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

General location: Eastern Mojave Desert near Piute Valley and New York Mountains, Crescent Peak BLM Grazing Allotment
Major uses: Grazing and wildlife habitat
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 4,265 to 4,755 feet (1,300 to 1,450 meters)
Mean annual precipitation: 7 to 9 inches (180 to 230 millimeters)
Mean annual air temperature: 63 to 66 degrees F (17 to 19 degrees C)
Frost-free period: 180 to 240 days

Map Unit Composition

Minehart: 85 percent
Minor components: 15 percent

Characteristics of the Minehart Soil

Slope: 2 to 8 percent
Aspect: All
Landform: Summits of fan remnants
Parent material: Alluvium derived from volcanic and metamorphic rock
Typical vegetation: Galleta, Cooper's goldenbush, bush muhly, black grama, snakeweed, spiny hopsage, banana yucca, buckhorn cholla, and winterfat

Selected properties and qualities
pH of the surface layer: 7.8
Surface area covered by coarse fragments: 40 to 55 percent coarse, subrounded pebbles; 0 to 5 percent subrounded cobbles; and 0 to 3 percent subrounded stones
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 4.7 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: High
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: C

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9” p.z.

Typical profile
A—0 to 3 inches; gravelly fine sandy loam
Bt—3 to 13 inches; gravelly loam
Btk1—13 to 20 inches; clay loam
2Btk2—20 to 60 inches; extremely gravelly coarse sandy loam

Minor Components

Paleargids and similar soils
Extent of the component in the map unit: About 7 percent
Slope: 2 to 8 percent
Landform: Fan remnants
Typical vegetation: Galleta, black grama, Cooper’s goldenbush, and Nevada jointfir
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9” p.z.

Ustidur and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 8 to 30 percent
Landform: Backslopes of partial ballenas
Typical vegetation: Mojave yucca, galleta, Joshua tree, black grama, banana yucca, desert needlegrass, littleleaf ratany, threeawn, Eastern Mojave buckwheat, and Nevada jointfir
Ecological site: R030XB015NV, Shallow Gravelly Slope 7–9” p.z.

Arizo, cool, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 8 percent
Landform: Drainageways
Typical vegetation: Hollyleaf bursage, miscellaneous shrubs, burrobrush, Anderson wolfberry, Eastern Mojave buckwheat, big galleta, bush muhly, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, Apache plume, Mexican bladdersage, desert almond, fourwing saltbush, and desert needlegrass
Ecological site: R030XB051NV, Upland Wash

Rock outcrop
Extent of the component in the map unit: About 1 percent
Landform: Summits of cliffs
Ecological site: None assigned

4230—Hoppswell-Ustidur association, 4 to 30 percent slopes

Map Unit Setting

General location: Eastern Mojave Desert near Piute Valley and New York Mountains
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 3,345 to 5,245 feet (1,020 to 1,600 meters)
Mean annual precipitation: 7 to 9 inches (178 to 229 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 180 to 240 days

Map Unit Composition

Hoppswell: 55 percent
Ustidur: 30 percent
Minor components: 15 percent

Characteristics of the Hoppswell Soil

Slope: 4 to 8 percent
Aspect: All
Landform: Fan remnants
Parent material: Alluvium derived from igneous rock
Typical vegetation: Blackbrush, black grama, Indian ricegrass, big galleta, desert needlegrass, miscellaneous perennial forbs, miscellaneous shrubs, Nevada jointfir, galleta, and miscellaneous perennial grasses

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 60 to 80 percent coarse, subrounded pebbles; 0 to 10 percent subrounded cobbles; and 0 to 5 percent subrounded stones
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 3.0 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Very rare
Present ponding: None
Surface runoff: High
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: C

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB014NV, Shallow Gravelly Loam 7–9” p.z.

Typical profile
0 to 2 inches; extremely gravelly sandy loam
2 to 15 inches; very gravelly sandy clay loam
15 to 64 inches; stratified extremely gravelly coarse sand to very gravelly sandy loam

Characteristics of the Ustidur Soil

Slope: 8 to 30 percent
Aspect: All
Landform: Backslopes of partial ballenas
Parent material: Alluvium derived from metamorphic rock
Typical vegetation: Blackbrush, big galleta, black grama, desert needlegrass, miscellaneous perennial forbs, miscellaneous shrubs, Eastern Mojave buckwheat, Nevada jointfir, and miscellaneous perennial grasses

Selected properties and qualities
pH of the surface layer: 8.4
Surface area covered by coarse fragments: 65 to 80 percent coarse, subrounded pebbles; 0 to 10 percent subrounded cobbles; and 0 to 3 percent subrounded stones
Depth to restrictive feature: 4 to 14 inches to duripan
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 0.3 inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: High
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XB015NV, Shallow Gravelly Slope 7–9" p.z.

Typical profile
0 to 2 inches; extremely gravelly sandy loam
2 to 6 inches; very gravelly sandy loam
6 to 38 inches; cemented material
38 to 60 inches; extremely gravelly sandy loam

Minor Components

Ustic Torriorthents and similar soils
Extent of the component in the map unit: About 8 percent
Slope: 4 to 8 percent
Landform: Upper parts of inset fans
Typical vegetation: Blackbrush, black grama, desert needlegrass, big galleta, miscellaneous perennial forbs, miscellaneous perennial grasses, miscellaneous shrubs, yucca, Nevada jointfir, bush muhly, buckhorn cholla, and burrobrush
Ecological site: R030XB090NV, Gravelly Fan 7–9" p.z.

Typic Torriorthents and similar soils
Extent of the component in the map unit: About 5 percent

Slope: 8 to 30 percent
Landform: Lower parts of inset fans
Typical vegetation: Blackbrush, big galleta, black grama, desert needlegrass, miscellaneous perennial forbs, miscellaneous shrubs, Eastern Mojave buckwheat, Nevada jointfir, and miscellaneous perennial grasses
Ecological site: R030XB015NV, Shallow Gravelly Slope 7–9" p.z.

Arizo and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 8 percent
Landform: Drainageways
Typical vegetation: Hollyleaf bursage, miscellaneous shrubs, burrobrush, Anderson wolfberry, Eastern Mojave buckwheat, big galleta, bush muhly, miscellaneous perennial forbs, miscellaneous perennial grasses, littleleaf ratany, Apache plume, Mexican bladdersage, desert almond, fourwing saltbush, and desert needlegrass
Ecological site: R030XB051NV, Upland Wash

4703—Typic Haplosalids, 0 to 2 percent slopes

Map Unit Setting

General location: Clark Mountain BLM Grazing Allotment, Ivanpah Lake
Major uses: Grazing, wildlife habitat, and recreation
Major land resource area: 30—Mojave Desert
Landscape: Bolsons
Elevation: 2,575 to 2,605 feet (785 to 795 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 63 to 68 degrees F (17 to 20 degrees C)
Frost-free period: 280 to 320 days

Map Unit Composition

Typic Haplosalids, ponded: 85 percent
Minor components: 15 percent

Characteristics of the Typic Haplosalids, Ponded

Slope: 0 to 2 percent
Aspect: All
Landform: Playas
Parent material: Lacustrine deposits derived from limestone and dolomite

Selected properties and qualities
pH of the surface layer: 9.6
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity to a depth of 60 inches: About 9.7 inches (high)
Shrink-swell potential: Moderate (LEP 3 to less than 6)

Selected hydrologic properties
Present flooding: None
Present ponding: Occasional
Surface runoff: Negligible
Current water table: None noted

Natural drainage class: Moderately well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: None assigned

Typical profile
A—0 to 1 inch; clay loam
Cnz1—1 to 8 inches; clay loam
Cnz2—8 to 59 inches; loam

Minor Components

Bluepoint and similar soils
Extent of the component in the map unit: About 10 percent
Slope: 2 to 4 percent
Landform: Fan skirts
Typical vegetation: Cattle saltbush, creosote bush, white bursage, and Indian ricegrass
Ecological site: R030XB046NV, Outwash Plain

Typic Haplosalids and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 1 to 2 percent
Landform: Alluvial flats
Typical vegetation: Cattle saltbush, Indian ricegrass, miscellaneous shrubs, miscellaneous perennial forbs, and miscellaneous perennial grasses
Ecological site: R030XB047NV, Alluvial Plain

4711—Bluepoint-Petronodic Haplocalcids association, 0 to 50 percent slopes

Map Unit Setting

General location: Mojave Desert, Southeastern California, Mesquite Lake/Sandy Valley area
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Bolsons
Elevation: 2,525 to 2,620 feet (770 to 799 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 63 to 68 degrees F (17 to 20 degrees C)
Frost-free period: 280 to 320 days

Map Unit Composition

Bluepoint: 55 percent
Petronodic Haplocalcids: 25 percent
Minor components: 20 percent

Characteristics of the Bluepoint Soil

Slope: 8 to 50 percent
Aspect: South to northwest
Landform: Active and stabilized dunes
Parent material: Eolian deposits derived from mixed sources
Typical vegetation: Honey mesquite and fourwing saltbush

Selected properties and qualities
pH of the surface layer: 8.0
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 4.1 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XY045NV, Dunes 3–7" p.z.

Typical profile
A—0 to 1/2 inch; fine sand
C—1/2 to 59 inches; fine sand

Characteristics of the Petronodic Haplocalcids

Slope: 0 to 2 percent
Aspect: South to northwest
Landform: Relict toeslopes of alluvial flats and hummocky toeslopes of lake plains
Parent material: Lacustrine deposits derived from mixed sources
Typical vegetation: Shadscale, Mojave seablite, alkali sacaton, and pepperweed

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity to a depth of 60 inches: About 7.6 inches (high)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Negligible
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XB114NV, Sodic Loam 3–5" p.z.

Typical profile
A—0 to 1/2 inch; fine sandy loam
Bky—1/2 to 4 inches; silt loam

Bknz1—4 to 23 inches; silty clay loam
Bknz2—23 to 59 inches; silty clay loam

Minor Components

Typic Haplocalcids, carbonatic, and similar soils
Extent of the component in the map unit: About 10 percent
Slope: 0 to 2 percent
Landform: Lake plains
Typical vegetation: Shadscale, fourwing saltbush, Mojave seablite, and alkali sacaton
Ecological site: R030XY013NV, Shallow Silty

Sodic Haplocalcids and similar soils
Extent of the component in the map unit: About 4 percent
Slope: 0 to 2 percent
Landform: Fan skirts
Typical vegetation: Cattle saltbush, creosote bush, white bursage, and Indian ricegrass
Ecological site: R030XY046NV, Outwash Plain

Typic Torriorthents and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 0 to 2 percent
Landform: Toeslopes of dunes
Typical vegetation: Honey mesquite, big saltbush, rubber rabbitbrush, and alkali sacaton
Ecological site: R030XY163CA, Loamy Lakeplain 5–7” p.z.

Haymont, hummocky, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 4 percent
Landform: Hummocky lake plains
Typical vegetation: Alkali sacaton, fourwing saltbush, Torrey’s saltbush, big galleta, honey mesquite, and saltgrass
Ecological site: R030XB020NV, Loamy Bottom

Sodic Haplocalcids and similar soils
Extent of the component in the map unit: About 1 percent
Slope: 0 to 2 percent
Landform: Alluvial flats
Typical vegetation: Fourwing saltbush, alkali sacaton, shadscale, cattle saltbush, and honey mesquite
Ecological site: R030XY009NV, Silt Bottom

4760—Hypoint-Pipeflat association, 2 to 8 percent slopes

Map Unit Setting

General location: Mojave Desert, Southeastern California, Jean Lake BLM Grazing Allotment
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Fan piedmonts
Elevation: 2,620 to 3,260 feet (800 to 994 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 62 to 70 degrees F (17 to 21 degrees C)
Frost-free period: 240 to 300 days

Map Unit Composition

Hypoint, overblown: 45 percent
Pipeflat: 35 percent
Minor components: 20 percent

Characteristics of the Hypoint, Overblown, Soil

Slope: 2 to 8 percent
Aspect: Southeast to west
Landform: Footslopes of fan aprons; sand sheets
Parent material: Eolian sands over alluvium derived from mixed sources
Typical vegetation: Big galleta, creosote bush, and white bursage

Selected properties and qualities
pH of the surface layer: 7.6
Surface area covered by coarse fragments: 2 to 5 percent fine pebbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 4.0 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very low
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XB150CA, Sandhill 3–5" p.z.

Typical profile
A—0 to 2 inches; loamy fine sand
AB—2 to 6 inches; loamy fine sand
Bk—6 to 24 inches; loamy fine sand
2Bk1—24 to 40 inches; very gravelly sand
2Bk2—40 to 63 inches; sand

Characteristics of the Pipeflat Soil

Slope: 2 to 4 percent
Aspect: Southeast to west
Landform: Sand sheets over lower fan aprons over fan remnants
Parent material: Eolian sands over alluvium derived from mixed sources
Typical vegetation: White bursage, big galleta, bush muhly, miscellaneous annual grasses, and miscellaneous annual forbs

Selected properties and qualities
pH of the surface layer: 8.0
Surface area covered by coarse fragments: 1 to 10 percent fine pebbles and 10 to 25 percent coarse pebbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High

Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 4.7 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very low
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XB007NV, Granitic Loam 5–7" p.z.

Typical profile
A—0 to 10 inches; loamy fine sand
Ck—10 to 25 inches; gravelly loamy sand
2Btkq—25 to 35 inches; gravelly sandy loam
2Bkq—35 to 61 inches; very gravelly loamy sand

Minor Components

Bluepoint and similar soils
Extent of the component in the map unit: About 6 percent
Slope: 2 to 4 percent
Landform: Sand sheets
Typical vegetation: Big galleta, creosote bush, and white bursage
Ecological site: R030XB150CA, Sandhill 3–5" p.z.

Arizo and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 2 to 4 percent
Landform: Fan aprons
Typical vegetation: White bursage, creosote bush, miscellaneous annual forbs, miscellaneous annual grasses, littleleaf ratany, and staghorn cholla
Ecological site: R030XB005NV, Limy 5–7" p.z.

Arizo, overblown, and similar soils
Extent of the component in the map unit: About 4 percent
Slope: 2 to 8 percent
Landform: Sand sheets over upper parts of fan aprons
Typical vegetation: White bursage, big galleta, creosote bush, miscellaneous annual grasses, and miscellaneous annual forbs
Ecological site: R030XB007NV, Granitic Loam 5–7" p.z.

Typic Torriorthents, thick sandy surface, and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 0 to 2 percent
Landform: Upper parts of fan skirts
Typical vegetation: Big galleta, white bursage, cattle saltbush, and fourwing saltbush
Ecological site: R030XB007NV, Granitic Loam 5–7" p.z.

Arizo, occasionally flooded, and similar soils
Extent of the component in the map unit: About 1 percent
Slope: 2 to 4 percent
Landform: Drainageways

Typical vegetation: Catclaw acacia, honey mesquite, creosote bush, and burrobush
Ecological site: None assigned

Arizo, rarely flooded, and similar soils
Extent of the component in the map unit: About 1 percent
Slope: 2 to 4 percent
Landform: Drainageways
Typical vegetation: White bursage, creosote bush, Mojave yucca, and white ratany
Ecological site: R030XB005NV, Limy 5–7" p.z.

4765—Typic Calcigypsids-Typic Haplosalids association, 0 to 2 percent slopes

Map Unit Setting

General location: Mojave Desert, Southeastern California, Mesquite Lake
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Bolsons
Elevation: 2,490 to 2,550 feet (760 to 778 meters)
Mean annual precipitation: About 0 inches (4 to 7 millimeters)
Mean annual air temperature: 63 to 68 degrees F (17 to 20 degrees C)
Frost-free period: 280 to 320 days

Map Unit Composition

Typic Calcigypsids: 55 percent
Typic Haplosalids, ponded: 25 percent
Minor components: 20 percent

Characteristics of the Typic Calcigypsids

Slope: 0 to 2 percent
Aspect: All
Landform: Toeslopes of lake terraces
Parent material: Lacustrine deposits derived from limestone and dolomite
Typical vegetation: Shadscale, Mojave seablite, and iodinebush

Selected properties and qualities
pH of the surface layer: 8.4
Surface area covered by coarse fragments: 1 to 10 percent fine, very strongly cemented gypsum crystals and 0 to 20 percent medium and coarse, very strongly cemented gypsum crystals
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 1.2 inches (very low)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Negligible
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XY161CA, Gypsic Lake 5–7" p.z.

Typical profile
Ay—0 to 7 inches; gypsiferous material
Bky—7 to 28 inches; gypsiferous material
Cy—28 to 71 inches; gypsiferous material

Characteristics of the Typic Haplosalids, Ponded

Slope: 0 to 2 percent
Aspect: All
Landform: Playas
Parent material: Lacustrine deposits derived from limestone and dolomite

Selected properties and qualities
pH of the surface layer: 8.0
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity to a depth of 60 inches: About 10.0 inches (very high)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: Frequent
Surface runoff: Negligible
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: None assigned

Typical profile
Anyz—0 to 1 inch; gypsiferous silt loam
Cnyz—1 to 8 inches; silt loam
Cnz1—8 to 28 inches; silt loam
Cnz2—28 to 59 inches; silty clay loam

Minor Components

Typic Haplosalids and similar soils
Extent of the component in the map unit: About 8 percent
Slope: 0 to 2 percent
Landform: Adjacent to playa lake plains
Typical vegetation: Mojave seablite, iodinebush, and fourwing saltbush
Ecological site: R030XY162CA, Salty Lakeplain 5–7" p.z.

Typic Torriorthents and similar soils
Extent of the component in the map unit: About 7 percent
Slope: 0 to 2 percent
Landform: Dunes over playas

Typical vegetation: Fourwing saltbush, alkali sacaton, shadscale, cattle saltbush, and honey mesquite
Ecological site: R030XY009NV, Silt Bottom

Leptic Haplogypsids and similar soils
Extent of the component in the map unit: About 3 percent
Slope: 0 to 2 percent
Landform: Lake terraces
Typical vegetation: Shadscale, fourwing saltbush, iodinebush, Mojave seablite, and big saltbush
Ecological site: R030XY160CA, Gypsic Terrace 5–7” p.z.

Leptic Haplogypsids, hummocky, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 2 to 4 percent
Landform: Hummocky lake plains
Typical vegetation: Fourwing saltbush, alkali sacaton, shadscale, cattle saltbush, and honey mesquite
Ecological site: R030XY009NV, Silt Bottom

4770—Haymont-Bluepoint association, 0 to 30 percent slopes

Map Unit Setting

General location: None noted
Major land resource area: 30—Mojave Desert
Landscape: Bolsons
Elevation: 2,590 to 2,655 feet (790 to 810 meters)
Mean annual precipitation: 3 to 8 inches (76 to 203 millimeters)
Mean annual air temperature: 61 to 69 degrees F (16 to 21 degrees C)
Frost-free period: 180 to 300 days

Map Unit Composition

Haymont: 40 percent
Haymont, moist: 30 percent
Bluepoint: 20 percent
Minor components: 10 percent

Characteristics of the Haymont Soil

Slope: 0 to 2 percent
Aspect: All
Landform: Lake plains
Parent material: Mixed alluvium
Typical vegetation: Fourwing saltbush, shadscale, alkali sacaton, miscellaneous perennial grasses, miscellaneous shrubs, and miscellaneous perennial forbs

Selected properties and qualities
pH of the surface layer: 8.4
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity to a depth of 60 inches: About 9.1 inches (high)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Rare
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XA096NV, Coarse Silty 3–5" p.z.

Typical profile
0 to 2 inches; loam
2 to 13 inches; silt loam
13 to 29 inches; silt loam
29 to 60 inches; silt loam

Characteristics of the Haymont, Moist, Soil

Slope: 0 to 2 percent
Aspect: All
Landform: Lake plains
Parent material: Mixed alluvium
Typical vegetation: Torrey's saltbush, fourwing saltbush, miscellaneous perennial forbs, miscellaneous perennial grasses, miscellaneous shrubs, and shadscale

Selected properties and qualities
pH of the surface layer: 8.4
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity to a depth of 60 inches: About 9.1 inches (high)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Rare
Present ponding: None
Surface runoff: Low
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XA011NV, Silty Terrace 5–7" p.z.

Typical profile
0 to 2 inches; loam
2 to 13 inches; silt loam
13 to 29 inches; silt loam
29 to 60 inches; silt loam

Characteristics of the Bluepoint Soil

Slope: 8 to 30 percent
Aspect: All

Landform: Dunes
Parent material: Eolian sands
Typical vegetation: Fourwing saltbush, honey mesquite, screwbean mesquite, Indian ricegrass, miscellaneous shrubs, creosote bush, miscellaneous perennial forbs, white bursage, and miscellaneous perennial grasses

Selected properties and qualities
pH of the surface layer: 8.0
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: High
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 4.7 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very low
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: A

California land use interpretive groups
Land capability classification, nonirrigated: 7s
Ecological site: R030XY045NV, Dunes 3–7” p.z.

Typical profile
0 to 14 inches; fine sand
14 to 60 inches; fine sand

Minor Components

Haymont and similar soils
Extent of the component in the map unit: About 4 percent
Slope: 0 to 2 percent
Landform: Lake plains
Typical vegetation: Alkali sacaton, fourwing saltbush, shadscale, honey mesquite, miscellaneous perennial grasses, miscellaneous perennial forbs, and miscellaneous shrubs
Ecological site: R030XY009NV, Silt Bottom

Haymont, hummocky, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 0 to 4 percent
Landform: Hummocky lake plains
Typical vegetation: Alkali sacaton, fourwing saltbush, big galleta, mesquite, Torrey’s saltbush, saltgrass, miscellaneous shrubs, miscellaneous perennial forbs, miscellaneous perennial grasses, and rabbitbrush
Ecological site: R030XB020NV, Loamy Bottom

Typic Torriorthents, coarse-loamy, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 0 to 2 percent
Landform: Fan skirts
Typical vegetation: Cattle saltbush, Indian ricegrass, miscellaneous shrubs, miscellaneous perennial forbs, and miscellaneous perennial grasses
Ecological site: R030XY047NV, Alluvial Plain

Typic Torriorthents, fine-silty, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 0 to 2 percent
Landform: Lake plains
Typical vegetation: Alkali sacaton, shadscale, fourwing saltbush, miscellaneous shrubs, miscellaneous perennial forbs, and miscellaneous perennial grasses
Ecological site: R030XA097NV, Clay Terrace

4775—Petronodic Haplocalcids-Calcic Petrocalcids association, 0 to 2 percent slopes

Map Unit Setting

General location: Mojave Desert, Southeastern California, Mesquite Lake/Sandy Valley area
Major uses: Recreation, wildlife habitat, and grazing
Major land resource area: 30—Mojave Desert
Landscape: Bolsons
Elevation: 2,530 to 2,590 feet (772 to 790 meters)
Mean annual precipitation: 4 to 7 inches (100 to 175 millimeters)
Mean annual air temperature: 63 to 68 degrees F (17 to 20 degrees C)
Frost-free period: 280 to 320 days

Map Unit Composition

Petronodic Haplocalcids: 45 percent
Calcic Petrocalcids: 40 percent
Minor components: 15 percent

Characteristics of the Petronodic Haplocalcids

Slope: 0 to 2 percent
Aspect: Northwest to northeast
Landform: Toeslopes of lake plains
Parent material: Lacustrine deposits derived from mixed sources
Typical vegetation: Shadscale, Mojave seablite, alkali sacaton, and pepperweed

Selected properties and qualities
pH of the surface layer: 8.6
Surface area covered by coarse fragments: 0 to 5 percent fine pebbles
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity to a depth of 60 inches: About 7.6 inches (high)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: Very rare
Present ponding: Rare
Surface runoff: Negligible
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: B

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XB114NV, Sodic Loam 3–5" p.z.

Typical profile

A—0 to 1/2 inch; silt loam
Bky—1/2 to 4 inches; silt loam
Bknz1—4 to 23 inches; silty clay loam
Bknz2—23 to 59 inches; silty clay loam

Characteristics of the Calcic Petrocalcids

Slope: 0 to 2 percent
Aspect: Northwest to northeast
Landform: Toeslopes of alluvial flats
Parent material: Alluvium derived from limestone and dolomite
Typical vegetation: Honey mesquite, shadscale, Mojave seablite, and alkali sacaton

Selected properties and qualities
pH of the surface layer: 8.6
Surface area covered by coarse fragments: 1 to 5 percent fine pebbles and 1 to 5 percent coarse pebbles
Depth to restrictive feature: 28 inches to petrocalcic material
Slowest rate of saturated hydraulic conductivity in the soil: Very low
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity to a depth of 60 inches: About 3.3 inches (low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: Rare
Surface runoff: Negligible
Current water table: None noted
Natural drainage class: Well drained
Hydrologic soil group: C

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: R030XY165CA, Alluvial Flat

Typical profile

A—0 to 2 inches; fine sandy loam
BA—2 to 6 inches; fine sandy loam
Bkn—6 to 16 inches; gravelly sandy loam
Bknz—16 to 28 inches; sandy loam
Bkm—28 to 59 inches; cemented material

Minor Components

Calcic Petrocalcids, mixed, and similar soils
Extent of the component in the map unit: About 10 percent
Slope: 0 to 2 percent
Landform: Alluvial flats
Typical vegetation: Honey mesquite, alkali goldenbush, shadscale, and Mojave seablite
Ecological site: R030XY164CA, Gravelly Skirt

Calcic Haplosalids, gravelly surface, and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 0 to 2 percent
Landform: Relict alluvial flats

Typical vegetation: Shadscale, Mojave seablite, alkali sacaton, and pepperweed
Ecological site: R030XB114NV, Sodic Loam 3–5" p.z.

Sodic Haplocalcids and similar soils
Extent of the component in the map unit: About 2 percent
Slope: 0 to 2 percent
Landform: Fan skirts
Typical vegetation: Cattle saltbush, creosote bush, white bursage, and Indian ricegrass
Ecological site: R030XY046NV, Outwash Plain

Sodic Haplocalcids, rarely flooded, and similar soils
Extent of the component in the map unit: About 1 percent
Slope: 0 to 1 percent
Landform: Drainageways
Typical vegetation: Fourwing saltbush, alkali sacaton, shadscale, cattle saltbush, and honey mesquite
Ecological site: R030XY009NV, Silt Bottom

4820—Playa

Map Unit Setting

General location: None noted
Major land resource area: 30—Mojave Desert
Landscape: Bolsons

Map Unit Composition

Playa: 90 percent
Minor components: 10 percent

Characteristics of the Playa

Slope: 0 to 1 percent
Aspect: All
Landform: Playa
Parent material: Lacustrine deposits

Selected properties and qualities
pH of the surface layer: 8.8
Surface area covered by coarse fragments: None noted
Depth to restrictive feature: No restrictive feature noted
Slowest rate of saturated hydraulic conductivity in the soil: Low
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity to a depth of 60 inches: About 1.8 inches (very low)
Shrink-swell potential: High (LEP 6 to 9)

Selected hydrologic properties
Present flooding: None
Present ponding: Frequent
Surface runoff: Negligible
Current water table: None noted
Natural drainage class: Very poorly drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 8w
Ecological site: None assigned

Minor Components

Hypoint and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 0 to 2 percent
Landform: Fan skirts
Typical vegetation: Cattle saltbush, Indian ricegrass, miscellaneous shrubs, miscellaneous perennial forbs, and miscellaneous perennial grasses
Ecological site: R030XY047NV, Alluvial Plain

Tipnat and similar soils
Extent of the component in the map unit: About 5 percent
Slope: 0 to 4 percent
Landform: Alluvial flats
Typical vegetation: Cattle saltbush, Indian ricegrass, miscellaneous shrubs, miscellaneous perennial forbs, and miscellaneous perennial grasses
Ecological site: R030XY047NV, Alluvial Plain

5000—Copperworld-Lithic Ustic Haplargids association, 30 to 60 percent slopes

Map Unit Setting

General location: Clark Mountain BLM Grazing Allotment; metamorphic hills and mountains on the south end of the survey area and near Mineral Hill
Major uses: Grazing and wildlife habitat
Major land resource area: 30—Mojave Desert
Landscape: Mountains
Elevation: 4,490 to 5,740 feet (1,370 to 1,750 meters)
Mean annual precipitation: 6 to 8 inches (150 to 205 millimeters)
Mean annual air temperature: 50 to 55 degrees F (10 to 13 degrees C)
Frost-free period: 160 to 200 days

Map Unit Composition

Copperworld: 70 percent
Lithic Ustic Haplargids, cool: 25 percent
Minor components: 5 percent

Characteristics of the Copperworld Soil

Slope: 30 to 60 percent
Aspect: Northwest to southwest
Landform: Backslopes of mountains
Parent material: Residuum and colluvium derived from metamorphic rock
Typical vegetation: Blackbrush, Mormon needlegrass, spiny hopsage, desert needlegrass, and fourwing saltbush

Selected properties and qualities
pH of the surface layer: 7.2
Surface area covered by coarse fragments: 5 to 25 percent fine, subangular pebbles; 40 to 70 percent coarse, subangular pebbles; 5 to 25 percent subangular cobbles; and 0 to 10 percent subangular stones
Depth to restrictive feature: 7 to 15 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately high
Salinity: Not saline
Sodicity: Not sodic

Available water capacity to a depth of 60 inches: About 0.6 inch (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Medium
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 8
Ecological site: R030XC007NV, Shallow Gravelly Loam 7–9" p.z.

Typical profile
A—0 to 1 inch; gravelly sandy loam
Bt—1 to 7 inches; very gravelly sandy clay loam
R—7 to 17 inches; bedrock

Characteristics of the Lithic Ustic Haplargids, Cool

Slope: 30 to 60 percent
Aspect: Northwest to southwest
Landform: Backslopes of mountains
Parent material: Residuum and colluvium derived from metamorphic rock
Typical vegetation: Utah juniper, desert needlegrass, black grama, blackbrush, and singleleaf pinyon

Selected properties and qualities
pH of the surface layer: 6.8
Surface area covered by coarse fragments: 15 to 60 percent coarse, subangular pebbles; 15 to 20 percent subangular cobbles; and 0 to 5 percent subangular stones
Depth to restrictive feature: 7 to 15 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 1.4 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Medium
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 8
Ecological site: F030XC238NV, Juniperus Osteosperma-Pinus Monophylla/Purshia Stansburiana-Coleogyne Ramosissima/Bouteloua Gracilis-Poa Fendleriana

Typical profile
A—0 to 1 inch; loamy sand
Bw—1 to 10 inches; gravelly sandy loam
Bt—10 to 15 inches; very gravelly sandy loam
R—15 to 25 inches; bedrock

Minor Components

Rock outcrop
Extent of the component in the map unit: About 5 percent
Slope: 30 to 60 percent
Landform: Summits, shoulders, and sideslopes of mountains
Ecological site: None assigned

5300—Lithic Ustic Haplocalcids gravelly sandy loam, 30 to 60 percent slopes

Map Unit Setting

General location: Clark Mountain BLM Grazing Allotment; limestone hills and mountains on the south end of the survey area and near Mineral Hill
Major uses: Grazing and wildlife habitat
Major land resource area: 30—Mojave Desert
Landscape: Mountains
Elevation: 5,245 to 7,315 feet (1,600 to 2,230 meters)
Mean annual precipitation: 5 to 8 inches (125 to 200 millimeters)
Mean annual air temperature: 50 to 55 degrees F (10 to 13 degrees C)
Frost-free period: 160 to 200 days

Map Unit Composition

Lithic Ustic Haplocalcids: 90 percent
Minor components: 10 percent

Characteristics of the Lithic Ustic Haplocalcids

Slope: 30 to 60 percent
Aspect: North to southwest
Landform: Backslopes of mountains
Parent material: Residuum and colluvium derived from limestone
Typical vegetation: Utah juniper, desert needlegrass, black grama, blackbrush, singleleaf pinyon, and sagebrush

Selected properties and qualities
pH of the surface layer: 8.2
Surface area covered by coarse fragments: 10 to 20 percent fine, subangular pebbles; 25 to 40 percent medium and coarse, subangular pebbles; 25 to 35 percent subangular cobbles; and 0 to 10 percent subangular stones
Depth to restrictive feature: 14 to 18 inches to lithic bedrock
Slowest rate of saturated hydraulic conductivity in the soil: Moderately low
Salinity: Not saline
Sodicity: Not sodic
Available water capacity to a depth of 60 inches: About 1.7 inches (very low)
Shrink-swell potential: Low (LEP less than 3)

Selected hydrologic properties
Present flooding: None
Present ponding: None
Surface runoff: Very high
Current water table: None noted
Natural drainage class: Somewhat excessively drained
Hydrologic soil group: D

California land use interpretive groups
Land capability classification, nonirrigated: 7e
Ecological site: F030XC238NV, Juniperus Osteosperma-Pinus Monophylla/Purshia Stansburiana-Coleogyne Ramosissima/Bouteloua Gracilis-Poa Fendleriana

Typical profile
A1—0 to 1 inch; gravelly sandy loam
A2—1 to 6 inches; very gravelly sandy loam
Bk—6 to 15 inches; very gravelly sandy loam
R—15 to 24 inches; bedrock

Minor Components

Rock outcrop
Extent of the component in the map unit: About 10 percent
Slope: 50 to 75 percent
Landform: Summits, shoulders, and sideslopes of mountains
Ecological site: None assigned

NOTCOM—Soils data not complete

Map Unit Setting

General location: None noted
Major land resource area: 30—Mojave Desert

Map Unit Composition

Soils data not complete: 100 percent

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *limitations* and *no limitations.* The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor.*

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact

on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops (USDA–SCS, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar

management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of map units in this survey area is given in the section "Detailed Soil Map Units" and in table 2.

Major Land Resource Areas

The land capability classification system is further refined by designating the major land resource area (MLRA) of the soils. A major land resource area is a broad geographic area that has a distinct combination of climate, topography, vegetation, land use, and general type of farming (USDA–SCS, 1981). This survey area is in major land resource area 30—Mojave Desert. The natural vegetation in this MLRA consists of desert shrubs. Many areas are used locally for grazing or recreation. Elevation ranges from 282 feet below sea level (in Death Valley) to 3,950 feet above sea level (in the mountains). The average precipitation is 50 to 205 millimeters and occurs mainly during the winter. The average annual air temperature ranges from 16 to 24 degrees C, and the average frost-free season is 240 to 320 days. Water is scarce throughout the MLRA. Dry lakebeds hold water only after large rainstorms.

Rangeland

Loretta J. Metz, Marchel Munnecke, and Kendra Moseley, rangeland management specialists, Natural Resources Conservation Service, helped to prepare this section.

Rangeland has native vegetation consisting of grasses, grasslike plants, forbs, shrubs, and trees. It has a total canopy cover of trees of less than 25 percent. The vegetation in rangeland provides habitat, helps to control erosion, and may be suitable for grazing or browsing by wildlife and domestic animals. Rangeland offers scenic and recreational opportunities and is important environmentally and economically.

Characterization and Management

Rangeland is characterized and quantified based on the production of various kinds, proportions, and amounts of vegetation. Plant communities are largely dependent on the soils, climate, topography, aspect, slope, and other abiotic features of the landscape. The Natural Resources Conservation Service classifies rangeland into ecological sites. Ecological sites assist in the understanding of soil-plant interactions and the effects of selected management practices. Each ecological site is a distinctive kind of land with specific physical characteristics. It differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation (USDA–NRCS, 2003).

Soil types are related to plant communities and serve as the basis for the development of ecological site descriptions. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of rangeland plants and the composition and distribution of the plant community. These properties include texture, depth, and content of coarse fragments. Other important factors include reaction, content of salt, fog drip, and a seasonal high water table. Geography and climate influence the location of plant communities on the landscape and affect soil properties. For example, soils on southerly and westerly slopes commonly support chaparral-type plant communities as a result of the intense heat, high evapotranspiration rate, and resultant droughtiness. Soils on northerly and easterly slopes are exposed to less solar radiation and generally support forestland plant communities. The soil properties that affect composition, production, and

distribution of the plant community are considered when ecological sites are correlated to individual soils.

Table 3 shows, for each soil in each map unit, the ecological site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the expected percentage of each species. An explanation of the column headings in the table follows.

An *ecological site* is the product of all the environmental factors responsible for its development. It has characteristic soils; a characteristic hydrology, particularly infiltration and runoff; and a characteristic plant community (kind and amount of vegetation). The hydrology of the site is influenced by development of the soil and the plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that on other ecological sites in the kind and/or proportion of species or in total production.

Total dry-weight production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods. The total production figures can be used to calculate carrying capacity and stocking rates for management of domestic animals or wildlife and to determine fuel loading for prescribed burning plans or fire modeling.

Characteristic vegetation is the grasses, grasslike plants, forbs, and shrubs that make up most of the potential natural plant community. The species are listed by common name. Under *species composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Table 4 lists the common names, scientific names, and symbols for the plants listed in table 3. Table 4 can be used as an aid in correctly identifying plants and as a cross reference. All of the plant names are correlated directly with the PLANTS Database (http://plants.usda.gov).

Vegetation

The vegetation in the survey area can be divided into six broad categories: creosote bush scrub, perennial grassland, blackbrush scrub, broom snakeweed scrub, desert saltbush scrub, and desert wash scrub. The creosote bush scrub category is dominated by creosote bush *(Larrea tridentata)* and white bursage *(Ambrosia dumosa)*. It is the most abundant vegetation type in the survey area. It is on landforms ranging from gently sloping fans remnants to steep side slopes of mountains and hills. The perennial grassland category is dominated by big galleta *(Pleuraphis rigida)*. It is almost exclusively on sand sheets in the Jean Lake BLM Grazing Allotment. The blackbrush scrub category is dominated by blackbrush *(Coleogyne ramosissima)*. It is at mid to high elevations on mountain slopes and fan

remnants. The Crescent Peak BLM Grazing Allotment contains some areas of burned blackbrush. Blackbrush rarely regenerates after a burn. The resulting community is a mix of short-lived, opportunistic shrubs and grasses. The broom snakeweed scrub category is dominated by broom snakeweed *(Gutierrezia sarothrae),* Virgin River brittlebush *(Encelia virginensis),* and big galleta *(Pleuraphis rigida).* It is on limestone mountains. The desert saltbush scrub category is characterized by one or more species of saltbush *(Atriplex* ssp.) in combination with other halophytes. It is on basin floors adjacent to playas. The desert wash scrub category is in ephemeral channels. It is influenced by the size of the watershed, slope gradient, parent material, soil texture, and climate. Most of the drainageways in the survey areas are dominated by various disturbance-adapted shrubs, including catclaw acacia *(Acacia greggii),* Virgin River brittlebush, burrobush *(Hymenoclea salsola),* and purple sage *(Salvia dorrii).*

Dominant Ecological Sites

A brief description of the dominant ecological sites in the survey area is given in the following paragraphs. A complete description of the ecological sites can be obtained from the local office of the Natural Resources Conservation Service or downloaded from the Web site of the Ecological Site Information System (http://esis.sc.egov.usda.gov/). Table 3 lists the specific ecological site for each soil in the survey area.

30XB001NV, Limy Hill 5-7" p.z.—This site is on hills and on side slopes of mountains at lower elevations. It is on all exposures. Slopes range from 8 to 75 percent. Elevations range from 2,500 to 5,000 feet. The soils are shallow and well drained. The runoff rate is very low. Available water capacity is very low. The site is very similar to the Limy 5-7" p.z. site. The main differences are that this site has steeper slopes and lower production. The composition of shrubs is dominated by white bursage and includes a significant amount of creosote bush. Other important shrubs include littleleaf ratany *(Krameria grayi)* and Fremont's dalea *(Psorothamnus fremontii).* The dominant grasses include big galleta and fluffgrass *(Dasyochloa pulchella).* Nonnative species include Mediterranean grass *(Schismus arabicus).*

30XB005NV, Limy 5-7" p.z.—This site is mostly on fan remnants and fan piedmonts. It is fairly widespread. Slopes range from 2 to 8 percent. Elevations range from 2,500 to 4,000 feet. The soils range from moderately deep to very deep and are somewhat excessively drained. The runoff rate is very low. Available water capacity is low. The typical plant community is dominated by white bursage with a significant amount of creosote bush. Other important shrubs include littleleaf ratany and Nevada jointfir *(Ephedra nevadensis).* The dominant grass is big galleta. Nonnative species include Mediterranean grass.

30XB014NV, Shallow Gravelly Loam 7-9" p.z.—This site is on fan remnants and upper fan piedmonts in the Crescent Peak area. Slopes range from 0 to 30 percent. Elevations range from 4,200 to 5,500 feet. The soils are shallow and somewhat excessively drained. The runoff rate is low and medium. Available water capacity is low. The dominant shrub is blackbrush. Minor shrubs include Nevada jointfir, Mojave buckwheat, broom snakeweed, Anderson's wolfberry *(Lycium andersonii),* Mojave yucca, banana yucca *(Yucca bacata),* and burrobush. Grasses make up a significant amount of the production on the site. The dominant grass is black grama *(Bouteloua eriopoda),* and the plant community includes a significant amount of big galleta grass. The plant community is altered dramatically if the site is burned. Blackbrush generally does not regenerate after a fire and may be permanently removed. The resulting community is dominated by short-lived, opportunistic shrubs and by bunch grasses. The dominant shrubs in the resulting community include goldenbush *(Ericameria cooperi),* California buckwheat, and burrobush. Perennial grasses can root-sprout

after a burn and generally benefit from the added nutrients released by the fire, increasing in abundance. Shrubs that are capable of root-sprouting after a burn may increase in abundance. These shrubs include Mojave yucca, Joshua tree, banana yucca, and Nevada jointfir.

30XB029NV, Shallow Gravelly Loam 5-7" p.z.—This site is on fan piedmonts, hills, and mountain toeslopes. Slopes range from 30 to 60 percent. Elevations range from 3,000 to 5,000 feet. The soils are shallow and somewhat excessively drained. The runoff rate is very high. Available water capacity is low. The dominant shrub is blackbrush, and creosote bush is a minor shrub. Other shrubs include Eastern Mojave buckwheat, Nevada jointfir, white ratany, and Virgin River encelia. The dominant grass is big galleta.

30XB043NV, Claypan 5-7" p.z.—This site is on fan remnants and fan piedmonts. Slopes range from 0 to 15 percent. Elevations range from 3,500 to 4,200 feet. The soils are very deep and range from well drained to excessively drained. The runoff rate is low. Available water capacity is moderate. The plant community consists mainly of perennial grasses. It is dominated by big galleta and includes a significant amount of bush muhly *(Muhlenbergia porteri)* and Indian ricegrass *(Achnatherum hymenoides)*. The dominant shrub is creosote bush. Other important shrubs include winterfat *(Krascheninnikovia lanata)*, spiny hopsage *(Grayia spinosa)*, white bursage, Nevada jointfir, and littleleaf ratany.

30XB114NV, Sodic Loam 3-5" p.z.—This site is on alluvial flats and lake plains. Slopes range from 2 to 4 percent. Elevations range from 2,400 to 2,600 feet. The soils are deep and very deep and are well drained. Runoff is negligible. Available water capacity is moderate and high. The soils are moderately saline and strongly saline. The dominant shrub is shadscale *(Atriplex confertifolia)*. The site also has a significant amount of Mojave seablite *(Suaeda moquinii)* and trace to moderate amounts of Fremont's dalea and alkali goldenbush *(Isocoma acradenia)*. The dominant grasses are saltgrass *(Distichlis spicata)* and alkali sacaton *(Sporobolus airoides)*. Areas of this site are infested with Mediterranean grass, which forms thick mats between the shrubs.

30XB143CA, Shallow Granitic Loam 7-9" p.z.—This site is on fan remnants. Slopes range from 2 to 50 percent. Elevations range from 3,300 to 4,800 feet. The soils range from shallow to moderately deep, formed in mixed alluvium, and are well drained. The runoff rate is low. Available water capacity is low. The plant community is dominated by blackbrush and includes a significant amount of creosote bush. Other important shrubs include Nevada jointfir, Eastern Mojave buckwheat *(Eriogonum fasciculatum)*, Mojave yucca, and Joshua tree *(Yucca brevifolia)*. The site also has a significant amount of grasses. The dominant grass is desert needlegrass.

30XB150CA, Sandhill 3-5" p.z.—This site is on thick sand sheets covering fan piedmonts and fan aprons. The sand sheets are eolian deposits derived from mixed sources. Slopes range from 2 to 30 percent. Elevations range from 2,500 to 3,200 feet. The soils are deep and very deep and are excessively drained. The runoff rate is very low. Available water capacity is low. The plant community is dominated by big galleta grass and includes a significant amount of Indian ricegrass and dropseed *(Sporobolus* spp.). The shrubs are less significant than the grasses and include white bursage, Nevada jointfir, winterfat, fourwing saltbush *(Atriplex canescens)*, and creosote bush.

30XB156CA, Limy 5-7" p.z. (low production).—This site is on dry fan remnants and fan aprons. Slopes range from 2 to 15 percent. Elevations range from 2,500 to 3,500 feet. The soils are deep and very deep and are somewhat excessively drained. The runoff rate is low. Available water capacity is low and very low. This site is very similar to the Limy 5-7" p.z. site. The main differences are that this site has different dominant shrubs and substantially lower production. This site is codominated by white bursage and creosote bush, with just slightly more white bursage. Other

important shrubs include Nevada jointfir, littleleaf ratany *(Krameria erecta),* and Mojave yucca *(Yucca schidigera).*

30XB159CA, Broad Gravelly Wash, and 30XB163CA, Sandy Wash—Both of these sites are in drainageways that are occasionally flooded. They are in the majority of the drainageways in the survey area. The soils are deep, sandy, and well drained. Runoff is negligible. Available water capacity is very low. In areas of the Broad Gravelly Wash site, slopes range from 2 to 8 percent, elevations range from 2,500 to 5,000 feet, and the plant community is dominated by Virgin River brittlebush and includes significant amounts of catclaw acacia and burrobush (fig. 2). In areas of the Sandy Wash site, slopes range from 2 to 4 percent, elevations range from 3,600 to 4,200 feet, and the plant community is dominated by purple sage and includes significant amounts of catclaw acacia, desert almond *(Prunus fasciculate),* and Stansbury cliffrose *(Purshia stansburiana)* (fig. 3).

30XB160CA, Shallow Limestone Slope 5-7" p.z.—This site is on limestone mountains on all exposures. It is one of the most widespread sites in the Clark Mountain BLM Grazing Allotment. Slopes range from 30 to 75 percent. Elevations range from 2,700 to 5,200 feet. The soils are shallow to bedrock. The runoff rate is very high. Available water capacity is very low. The dominant shrub is broom snakeweed, and Virgin River brittlebush is also a significant shrub (fig. 4). Other important shrubs include Utah mortonia *(Mortonia utahensis),* Eastern Mojave buckwheat, Death Valley jointfir *(Ephedra funerea),* and Mojave yucca. The site also includes moderate amounts of big galleta. Disturbance is common on this site. Due to the large extent of exposed rock outcrop on the site, rain water rushing off the rock faces and onto the surface of the surrounding soil creates a wash dynamic. Many species common to washes grow on this site.

Figure 2.—Broad Gravelly Wash ecological site on Colosseum soils in an area of Weiser association, 2 to 8 percent slopes.

Figure 3.—Sandy Wash ecological site on Arizo soils in an area of Tonopah fine sandy loam, 2 to 8 percent slopes.

Figure 4.—Shallow Limestone Slope 5-7" p.z. ecological site on Umberci soils in an area of Umberci-Rock outcrop association, 30 to 75 percent slopes.

30XY164CA, Gravelly Skirt, and 30XY165CA, Alluvial Flat—Both of these sites are on lake plains adjacent to Mesquite Lake. Slopes range from 0 to 4 percent. Elevations range from 2,400 to 2,600 feet. The soils are very deep and well drained. Runoff is negligible. Available water capacity is low. Both sites are dominated by large western honey mesquite trees *(Prosopis glandulosa* var. *torreyana)*. The Gravelly Skirt site has an understory dominated by alkali goldenbush and includes minor amounts of Mojave seablite (fig. 5). The Alluvial Flat site has an understory dominated by shadscale and includes minor amounts of Mojave seablite (fig. 6).

Rare Plants

The Clark Mountain BLM Grazing Allotment is home to several species of rare plants. The following plants are listed by the California Native Plant Society as "rare" (CNPS, 2007). They are in list 4.3 unless otherwise indicated. All plants listed were observed from February to May, 2006.

California false pennyroyal: *Hedeoma nana* var. *californicum*
Clark Mountain agave: *Agave utahenis* var. *nevadensis* (list 4.2)
Clark Mountain buckwheat: *Eriogonum heermannii* var. *floccosum*
Desert bearpoppy: *Actomecon merriamii* (list 2.2)
Nakedstem sunray: *Enceliopsis nudicaulis*
New York Mountain cryptantha: *Cryptantha tumulosa*
Rusby's globemallow: *Sphaeralcea rusbyi* var. *eremicola* (list 1B.2)
Utah mortonia: *Mortonia utahensis*
Winged cryptantha: *Cryptantha holoptera*

Figure 5.—Gravelly Skirt ecological site on Calcic Petrocalcids in an area Petronodic Haplocalcids-Calcic Petrocalcids association, 0 to 2 percent slopes.

Figure 6.—Alluvial Flat ecological site on Calcic Petrocalcids in an area of Petronodic Haplocalcids-Calcic Petrocalcids association, 0 to 2 percent slopes.

Burrowing Habitat for Desert Tortoise

The desert tortoise *(Gopherus agassizii)* was listed by the Federal government as a "threatened" species in April 1990 under provisions of the Endangered Species Act of 1973 (USDI–BLM, 1992). The burrowing habitat of the desert tortoise is of special interest in the survey area. The desert tortoise spends at least 95 percent of its life in burrows (Burge and Royo, 2000).

The presence of soil suitable for digging burrows is a limiting factor affecting the distribution of the tortoise. Some of the burrows are just deep enough for a tortoise to fit into, while others extend for several feet (Burge and Royo, 2000). The amount of soil development affects the depth, distribution, and location of the burrows.

In this survey area, the soils on mountains and hills are typically poorly suited to burrowing. The shallow depth to bedrock and excessive rock fragments make burrowing difficult. The soils on bolson floors are typically poorly suited because of a hazard of flooding or ponding, the fine texture of the soils, and/or the presence of gypsic layers. The soils on fan piedmonts range from well suited to poorly suited.

The soils on fan piedmonts can be divided into two broad categories: those on recent alluvial fans and fan aprons and those on stable, more developed fan remnants. Soils on recent alluvial fans and fan aprons have undergone little soil development. These soils tend to be coarse textured and are therefore commonly poorly suited to burrowing. Moderately coarse textured and medium textured soils, which are common on the fan remnants, are typically more suited to burrowing. Soil properties that limit the suitability of a soil for use as burrowing habitat include flooding, excess sand or clay, rock fragments, and dense layers.

Soils on some fan remnants have undergone soil development, including increases in deposition of lime and silica leading to formation of petrocalcic materials

and duripans. In addition to the soil properties mentioned above, a shallow depth to a duripan can reduce the suitability of a soil for use as burrowing habitat. Drainageways that are incised below the duripan are commonly used for opportunistic burrowing by the desert tortoise. Field examination is recommended for these drainageways and other microenvironmental characteristics that are too small to be noted at the scale of mapping used in this survey.

Table 5 shows the suitability of the soils as burrowing habitat for the desert tortoise. The soils are rated according to their potential to be excavated for burrows by the desert tortoise. Burrows are considered a necessary part of specific local habitat. The ratings help in the identification and selection of sites that have the most potential for preserving, maintaining, or increasing local populations of the desert tortoise. The table evaluates only one habitat criteria. Other habitat needs include food, cover, and water. Ecological site descriptions provide important information on the kinds and amounts of vegetation that can be expected on different soils.

The information in the table is of a general nature. It is designed to be used during the planning process to identify areas of concern prior to the application of conservation practices. Based on objectives for wildlife, areas can be avoided or practices can be adjusted to minimize damage to the burrow habitat. The table does not take into account climate or soil temperature, which may influence the presence or distribution of the species at the local level.

The table gives a suitability class and identifies the dominant soil characteristics that limit the suitability. This information can be used to plan and develop alternatives by identifying sites that best meet the wildlife habitat requirements. The ecological site descriptions can be consulted if a more complete evaluation of habitat requirements is needed.

Soils that are rated *well suited* have no restrictions to use as burrowing habitat by desert tortoise. Colonization and population densities may be above average if other habitat factors are favorable. Soils that are rated *suited* are suited to use as burrowing habitat by the desert tortoise but have some restrictive features that may limit the use of the site. Colonization and population densities may be average for the area if the other habitat requirements are met. Soils that are rated *poorly suited* have soil characteristics that may limit establishment, maintenance, or use of the site. Colonization and population densities may be restricted even if all of the other habitat requirements are met.

Suitability for burrowing by the desert tortoise is determined by the soil characteristics that limit excavation, maintenance, and preservation of the burrows. The limitations that have the most effect on habitat and the assumptions made about the rating criteria listed in the table are as follows:

1.—Flooding from stream overflow adversely affects suitability for burrowing. In areas that are subject to flooding, the tortoises may be evicted or can be drowned and the walls of the burrows may collapse or become filled with debris. After the flooding is over, the tortoise's return to the site is delayed until the floodwater has receded and the soils have dried sufficiently to allow renewed activity.

2.—Ponding or standing water adversely affects suitability for burrowing.

3.—Bedrock adversely affects the potential depth of excavation by the tortoises. If bedrock is listed as a limiting factor in the table, the layers are either too hard or too dense for the tortoises to excavate.

4.—Highly gypsiferous layers are thought to adversely affect the potential depth of excavation by the tortoises. If gypsum is listed as a limiting factor in the table, the layers may be too dense for the tortoises to excavate or may be undesirable as habitat due to a high amount of gypsum crystals.

5.—Cemented layers adversely affect the potential depth of excavation by the tortoises. If cemented layers are listed as a limiting factor in the table, the layers are either too hard or too dense for the tortoises to excavate.

6.—A seasonal high water table can affect the tortoises, restrict burrowing, and result in drowning. If a seasonal high water table is listed as a limiting factor in the table, tunnels can cave or collapse, especially in those parts of the soil affected by the capillary fringe.

7.—Sandy layers, which are soft and loose, adversely affect the excavation and maintenance of burrows. If sandy layers are listed as a limiting factor in the table, sidewalls can be unstable and tunnels can collapse.

8.—Clayey layers adversely affect the excavation and maintenance of burrows. Clayey layers are slippery and sticky when wet, are slow to dry, and are commonly hard when dry.

9.—A high content of organic matter adversely affects maintenance of the burrows by reducing sidewall stability. If organic matter is listed as a limiting factor in the table, the burrows have a tendency to collapse. Highly fibrous organic materials are difficult for the tortoises to excavate.

10.—High concentrations of rock fragments adversely affect suitability for burrowing. If rock fragments are listed as a limiting factor in the table, the characteristics of the rock fragments are such that the tortoises are physically incapable of dislodging or transporting the rock fragments from the burrow.

11.—Dense layers adversely affect the potential depth of excavation by the tortoises. If dense layers are listed as a limiting factor in the table, the layers are either too hard or too dense for the tortoises to excavate.

Recreation

The soils of the survey area are rated in tables 6a and 6b according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *No limitations* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Limitations* indicates that the soil has some features that are favorable for the specified land use and some that are unfavorable. Ratings between 0.0 and 1.0 can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. A rating value of 1.0 indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

The numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in tables 6a and 6b can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Table 6a

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Table 6b

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding,

depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, topsoil, roadfill, and reclamation material; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 7a and 7b show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, and shallow excavations.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *No limitations* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Limitations* indicates that the soil has some features that are favorable for the specified land use and some that are unfavorable. Ratings between 0.0 and 1.0 can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. A rating value of 1.0 indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

The numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Table 7a

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and

amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Table 7b

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Sanitary Facilities

Tables 8a and 8b show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *No limitations* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Limitations* indicates that the soil has some features that are favorable for the specified land use and some that are unfavorable. Ratings between 0.0 and 1.0 can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. A rating value of 1.0 indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

The numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Table 8a

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation.

Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

Table 8b

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Tables 9a and 9b give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Table 9a

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 9a, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of gravel or sand are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains gravel or sand, the soil is considered a likely source regardless of thickness. The assumption is that the gravel or sand layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of gravel and sand. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings.

These ratings indicate the likelihood that the layer is a source of gravel or sand. The numbers 0.00 to 0.07 indicate that the layer is a poor source. The numbers 0.08 to 0.74 indicate the degree to which the layer is a likely source. The numbers 0.75 to 1.00 indicate that the layer is a good source.

The soils are rated *good, fair,* or *poor* as potential sources of topsoil, reclamation material, and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Table 9b

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Water Management

Table 10 provides information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The ratings are both verbal

and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *No limitations* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Limitations* indicates that the soil has some features that are favorable for the specified land use and some that are unfavorable. Ratings between 0.0 and 1.0 can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. A rating value of 1.0 indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

The numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Properties

Table 11 gives the engineering classifications and the range of properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified

as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Erosion Properties

Erosion factors are shown in table 12 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Depth to the upper and lower boundaries of each layer is indicated.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. A description of the wind erodibility groups is available in the National Soil Survey Handbook (http://soils.usda.gov/)

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Physical Properties

Table 13 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 13, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity (Ksat). The estimates in the table indicate the rate of water movement, in micrometers per second (µm/sec), when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 13, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Chemical Properties

Table 14 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in decisiemens per meter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Soil Features

Table 15 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Water Features

Table 16 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table 16 indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 16 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2006). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Aridisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Durid (*Dur*, meaning duripan, plus *id*, from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplodurids (*Hapl*, meaning minimal horizonation, plus *durid*, the suborder of the Aridisols with a duripan).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. For example, the adjective *Cambidic* identifies the subgroup with a duripan that has a cementation class of strong or less. An example is Cambidic Haplodurids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy-skeletal, mixed, superactive, thermic, shallow Cambidic Haplodurids.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. An example is the Owlshead series.

Table 17, "Taxonomic Classification of the Soils," indicates the order, suborder, great group, subgroup, and family of the soil series in the survey area.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993) and in the "Field Book for Describing and Sampling Soils" (Schoeneberger and others, 2002). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 2006). Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

Arizo Series

The Arizo series consists of very deep, excessively drained soils that formed in mixed alluvium. These soils are on recent alluvial fans, inset fans, and fan aprons and in drainageways. Slopes range from 2 to 15 percent. The mean annual precipitation is about 150 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 180 to 300 days.

Taxonomic class: Sandy-skeletal, mixed, thermic Typic Torriorthents

Typical Pedon

Arizo loamy sand, 2 to 8 percent slopes; at an elevation of 823 meters; in San Bernardino County, California; 180 meters north and 800 meters west of the southeast corner of sec. 26, T. 17 N., R. 14 E., San Bernardino Base and Meridian; USGS Ivanpah Lake, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 33 minutes, 51.30 seconds N. and long. 115 degrees, 26 minutes, 29.00 seconds W.; UTM 11S, 641249e, 3936738n; DTM: NAD83.

Surface rock fragments: 35 percent fine gravel, 15 percent medium and coarse gravel, and 1 percent cobbles

A—0 to 3 centimeters (0 to 1 inch); pale brown (10YR 6/3) loamy sand, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, very friable, nonsticky and nonplastic; few fine roots throughout; common very fine interstitial pores; 3 percent fine gravel and 2 percent medium and coarse gravel; slightly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

AB—3 to 12 centimeters (1 to 5 inches); pale brown (10YR 6/3) sand, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and coarse roots throughout; common very fine interstitial pores; 3 percent fine gravel and 2 percent medium and coarse gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bkq1—12 to 59 centimeters (5 to 23 inches); pale brown (10YR 6/3) gravelly coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots throughout; 1 percent faint light gray (10YR 7/2) silica on undersides of rock fragments and 2 percent faint light gray (10YR 7/2) carbonate coats on undersides of rock fragments; 20 percent fine gravel, 15 percent medium and coarse gravel, and 2 percent cobbles; strongly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bkq2—59 to 113 centimeters (23 to 44 inches); pale brown (10YR 6/3) very gravelly sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common fine roots and few very fine roots throughout; 1 percent faint light gray (10YR 7/2) carbonate coats on undersides of rock fragments and 1 percent faint

light gray (10YR 7/2) silica on undersides of rock fragments; 20 percent fine gravel, 25 percent medium and coarse gravel, and 2 percent cobbles; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bkq3—113 to 142 centimeters (44 to 56 inches); light yellowish brown (10YR 6/4) very gravelly sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots throughout; 1 percent faint light gray (10YR 7/2) carbonate coats on undersides of rock fragments and 1 percent faint light gray (10YR 7/2) silica on undersides of rock fragments; 15 percent fine gravel, 25 percent medium and coarse gravel, and 1 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bkq4—142 to 155 centimeters (56 to 61 inches); light yellowish brown (10YR 6/4) coarse sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; 1 percent faint light gray (10YR 7/2) silica on undersides of rock fragments and 2 percent faint light gray (10YR 7/2) carbonate coats on undersides of rock fragments; 5 percent fine gravel and 7 percent medium and coarse gravel; strongly effervescent; moderately alkaline (pH 8.2).

Range in Characteristics

Soil moisture control section: Usually dry, moist for short periods during winter and early spring and for 10 to 20 days cumulative from July to September following summer convection storms; typic aridic moisture regime

Soil temperature: 15 to 22 degrees C

Reaction: Neutral to strongly alkaline

Other features: Effervescent in some or all parts; thin coatings of calcium carbonate or silica on undersides of rock fragments in some pedons

Control section

Rock fragments: 35 to 85 percent

A horizon

Hue: 10YR or 7.5YR

Value: 5 to 8 dry, 3 to 6 moist

Chroma: 2 to 6

Bk or Bkq horizon

Hue: 10YR or 7.5YR

Value: 4 to 8 dry, 3 to 6 moist

Chroma: 2 to 6

Texture of the fine-earth fraction: Averages coarse sand to loamy sand

Structure: Single grain or massive

Birdspring Series

The Birdspring series consists of very shallow, well drained soils that formed in residuum and colluvium derived from limestone and dolomite. These soils are on mountains. Slopes range from 8 to 75 percent. The mean annual precipitation is about 180 millimeters, and the mean annual air temperature is about 16 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Loamy-skeletal, carbonatic, thermic Lithic Torriorthents

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Birdspring extremely gravelly fine sandy loam, 30 to 75 percent slopes; at an elevation of 1,096 meters; in Clark County, Nevada; about 13.7 kilometers north of

Jean and 5.6 kilometers northeast of Bird Spring; about 396 meters north and 213 meters west of the southeast corner of sec. 31, T. 23 S., R. 60 E., Mount Diablo Base and Meridian; USGS Bird Spring, Nevada, 7.5-minute quadrangle; lat. 35 degrees, 53 minutes, 58 seconds N. and long. 115 degrees, 17 minutes, 58 seconds W.; UTM 11S, 653480e, 3974143n; DTM: NAD83.

Surface rock fragments: 70 percent gravel, 5 percent cobbles, and 1 percent stones

A—0 to 3 centimeters (0 to 1 inch); very pale brown (10YR 7/3) extremely gravelly fine sandy loam, brown (10YR 5/3) moist; moderate thick platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine vesicular and tubular pores; 70 percent gravel, 5 percent cobbles, and 1 percent stones; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bk—3 to 10 centimeters (1 to 4 inches); very pale brown (10YR 7/3) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine and fine vesicular and tubular pores; 50 percent gravel; common thin coats and pendants of lime on the undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

R—10 centimeters (4 inches); hard limestone bedrock.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for less than 10 to 20 days cumulative from July to September following summer convection storms; typic aridic moisture regime

Soil temperature: 15 to 18 degrees C

Mean winter soil temperature: 4 to 7 degrees C. The upper part of the soil is frozen for short periods during most winters.

Depth to lithic contact: 10 to 25 centimeters (4 to 10 inches)

Control section

Clay content: 6 to 12 percent

Rock fragments: Averages 50 to 70 percent

Calcium carbonate equivalent in the smaller-than-20-millimeters fraction: 40 to 60 percent

A horizon

Value: 6 or 7 dry, 4 or 5 moist

Chroma: 3 or 4

Calcium carbonate equivalent in the fine-earth fraction: 15 to 25 percent

Bk horizon

Value: 5 or 6 moist

Texture of the fine-earth fraction: Fine sandy loam or silt loam

Rock fragments: 50 to 70 percent, mainly gravel

Structure: Weak or moderate, fine or medium, subangular blocky

Calcium carbonate equivalent in the fine-earth fraction: 15 to 25 percent

Bluepoint Series

The Bluepoint series consists of very deep, somewhat excessively drained soils that formed in eolian materials derived from mixed rock sources. These soils are on dunes and sand sheets. Slopes range from 2 to 50 percent. The mean annual precipitation is about 125 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 280 to 320 days.

Taxonomic class: Mixed, thermic Typic Torripsamments

Typical Pedon

Bluepoint fine sand in an area of Bluepoint-Typic Haplocalcids association, 0 to 50 percent slopes; at an elevation of 781 meters; in San Bernardino County, California; 510 meters west and 795 meters north of the southeast corner of sec. 28, T. 19 N., R. 13 E., San Bernardino Base and Meridian; lat. 35 degrees, 44 minutes, 35.20 seconds N. and long. 115 degrees, 34 minutes, 45.40 seconds W.; USGS Mesquite Lake, California, 7.5-minute topographic quadrangle; UTM 11S, 628466e, 3956385n; DTM: NAD83.

A—0 to 1 centimeter (0 to 0.5 inches); very pale brown (10YR 7/3) fine sand, pale brown (10YR 6/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; strongly effervescent; moderately alkaline (pH 8.0).

C—1 to 150 centimeters (0.5 to 60 inches); very pale brown (10YR 7/3) fine sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent; slightly alkaline (pH 7.6).

Range In Characteristics

Soil moisture control section: Usually dry, moist in some parts for short periods during winter and early spring and for 10 to 20 days cumulative following summer convection storms; typic aridic moisture regime

Soil temperature: 19 to 22 degrees C

Clay content: 2 to 6 percent; silt plus clay equal to or greater than 10 percent

C or Cy horizon

Value: 6 or 7 moist

Chroma: 2 or 3 dry

Texture of the fine-earth fraction: Loamy fine sand or fine sand

Reaction: Slightly alkaline or moderately alkaline

Other features: In some pedons, up to 5 percent visible gypsum that is the equivalent in size to medium or coarse sand

Calcic Petrocalcids

Calcic Petrocalcids are moderately deep, well drained soils that formed in alluvium derived from limestone and dolomite. These soils are on alluvial flats. Slopes range from 0 to 2 percent. The mean annual precipitation is about 125 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 280 to 320 days.

Taxonomic class: Coarse-loamy, carbonatic, thermic Calcic Petrocalcids

Typical Pedon

Calcic Petrocalcids in an area of Petronodic Haplocalcids-Calcic Petrocalcids association, 0 to 2 percent slopes; at an elevation of 776 meters; in San Bernardino County, California; about 8.75 kilometers south of the town of Sandy Valley, California, along the edge of Mesquite Lake; about 350 meters south and 490 west of the northeast corner of sec. 7, T. 18 N., R. 13 E., San Bernardino Base and Meridian; lat. 35 degrees, 42 minutes, 12.8 seconds N. and long. 115 degrees, 36 minutes, 51.7 seconds W.; USGS Mesquite Lake, California, 7.5-minute topographic quadrangle; UTM 11S, 625355e, 3951955n; DTM: NAD83. When described, the soil was moist from a depth of 15 to 40 centimeters.

Surface rock fragments: 2 percent fine gravel and 3 percent medium gravel

A—0 to 4 centimeters (0 to 1.5 inches); very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; soft, very friable, nonsticky

and nonplastic; common very fine roots throughout; common very fine interstitial pores; 2 percent limestone fragments 2 to 5 millimeters in size; violently effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

BA—4 to 16 centimeters (1.5 to 4 inches); light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots throughout; common fine tubular, common very fine interstitial, and common very fine tubular pores; 2 percent limestone fragments 2 to 5 millimeters in size; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Bkn—16 to 41 centimeters (4 to 16 inches); light yellowish brown (10YR 6/4) gravelly sandy loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few fine and common very fine roots throughout; 15 percent fine prominent irregular white (10YR 8/1), dry, masses of calcium carbonate with sharp boundaries in the matrix and 20 percent medium distinct irregular weakly cemented very pale brown (10YR 8/2), dry, nodules of calcium carbonate with clear boundaries in the matrix; 10 percent limestone fragments 2 to 5 millimeters in size and 5 percent limestone fragments 6 to 75 millimeters in size; violently effervescent (21 percent calcium carbonate equivalent); strongly alkaline (pH 8.6); abrupt wavy boundary.

Bknz1—41 to 52 centimeters (16 to 20.5 inches); very pale brown (10YR 7/3) loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, friable, slightly sticky and moderately plastic; few fine and common very fine roots throughout; 3 percent fine prominent irregular light gray (10YR 7/2), dry, masses of carbonate with sharp boundaries in the matrix; 3 percent medium distinct irregular weakly cemented very pale brown (10YR 8/2), dry, carbonate nodules with clear boundaries in the matrix; 2 percent coarse distinct irregular weakly cemented very pale brown (10YR 8/2), dry, carbonate nodules with clear boundaries in the matrix; 1 percent fine distinct salt crystals with clear boundaries in the matrix; 5 percent limestone fragments 2 to 5 millimeters in size; violently effervescent (45 percent calcium carbonate equivalent); strongly alkaline (pH 8.5); abrupt wavy boundary.

Bknz2—52 to 72 centimeters (20.5 to 28 inches); very pale brown (10YR 7/3) sandy loam, light brownish gray (10YR 6/2) moist; massive; moderately hard, friable, slightly sticky and slightly plastic; few fine and common very fine roots throughout; 3 percent fine prominent irregular light gray (10YR 7/2), dry, masses of carbonate with sharp boundaries in the matrix; 10 percent medium distinct irregular weakly cemented very pale brown (10YR 8/2), dry, nodules of carbonate with clear boundaries in the matrix; 20 percent coarse distinct irregular weakly cemented very pale brown (10YR 8/2), dry, nodules of carbonate with clear boundaries in the matrix; 1 percent fine distinct salt crystals with clear boundaries in the matrix; 5 percent limestone fragments 2 to 5 millimeters in size; violently effervescent; strongly alkaline (pH 8.5); abrupt wavy boundary.

Bkm—72 centimeters (28 inches); white (10YR 8/1) very strongly cemented to indurated petrocalcic material, light gray (10YR 7/2) moist; rigid; brittle; violently effervescent; high excavation difficulty.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part during winter and spring and for 10 to 20 days following summer convection storms; typic aridic moisture regime

Soil temperature: 19 to 22 degrees C

Depth to a calcic horizon: 15 to 25 centimeters

Depth to a petrocalcic horizon: 50 to 75 centimeters

Control section
Clay content: 8 to 12 percent
Rock fragments: 2 to 15 percent gravel
Reaction: Moderately alkaline or strongly alkaline
Calcium carbonate equivalent in the smaller-than-20-millimeters fraction: 15 to 25 percent in the upper part and 30 to 60 percent in the lower part (averaging greater than 40 percent)

A horizon
Value: 6 or 7 dry
Clay content: 8 to 10 percent
Reaction: Moderately alkaline or strongly alkaline

BA or AB horizon (where present)
Clay content: 8 to 14 percent
Calcium carbonate equivalent: 5 to 15 percent
Rock fragments: 1 to 7 percent
Electrical conductivity: 0 to 2 dS/m
Sodium adsorption ratio: 0 to 3
Reaction: Moderately alkaline or strongly alkaline
Other features: No visible secondary carbonates

Bkn or Bk horizon
Value: 6 or 7 dry
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Fine sandy loam or sandy loam
Clay content: 8 to 12 percent
Calcium carbonate equivalent: 15 to 25 percent
Rock fragments: 5 to 20 percent gravel
Nodules: 1 to 15 percent, fine to medium sized
Electrical conductivity: 0 to 7 dS/m
Sodium adsorption ratio: 0 to 20
Reaction: Moderately alkaline or strongly alkaline

Bknz horizon
Chroma: 2 or 3 moist
Texture of the fine-earth fraction: Sandy loam or loam
Clay content: 8 to 12 percent
Calcium carbonate equivalent: 30 to 60 percent
Rock fragments: 3 to 5 percent gravel
Nodules: Averages 20 to 45 percent, medium to coarse sized
Electrical conductivity: 6 to 12 dS/m
Sodium adsorption ratio: 0 to 37

Colosseum Series

The Colosseum series consists of very deep, somewhat excessively drained soils that formed in alluvium derived from limestone and dolomite. These soils are on fan aprons and in drainageways (fig. 7). Slopes range from 2 to 15 percent. The mean annual precipitation is about 150 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 280 to 320 days.

Taxonomic class: Sandy-skeletal, carbonatic, thermic Typic Haplocalcids

Typical Pedon

Colosseum fine sandy loam in an area of Colosseum association, 2 to 4 percent slopes (fig. 8); at an elevation of 804 meters; in San Bernardino County, California;

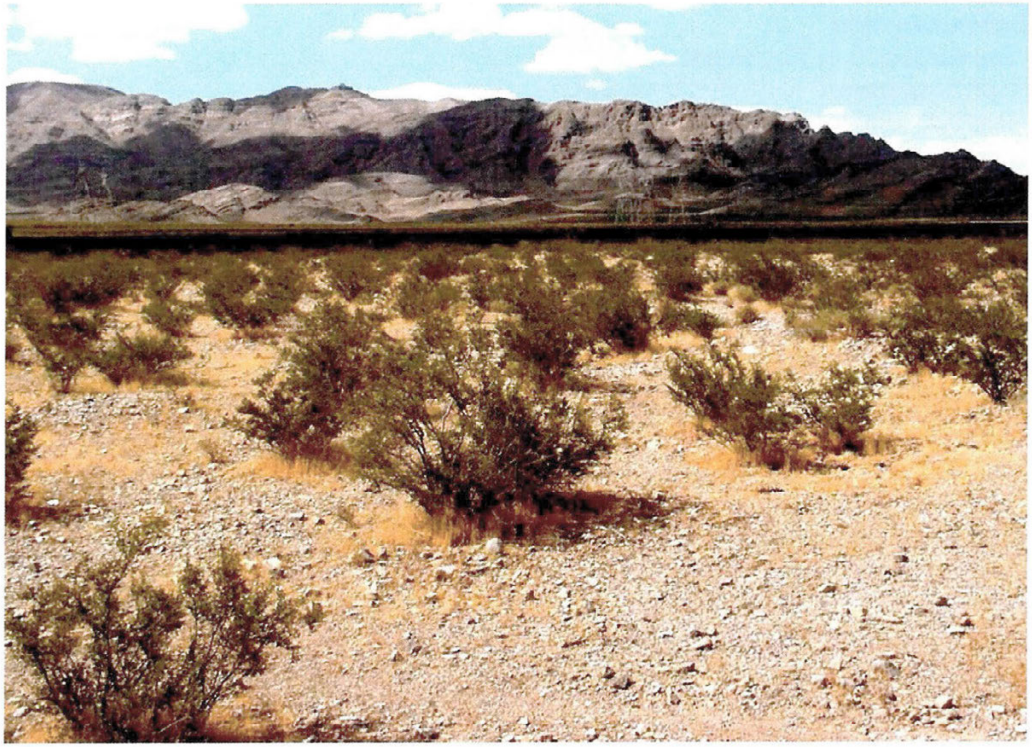

Figure 7.—A typical area of Colosseum soils on a fan apron near the Clark mountains.

about 3 kilometers southeast of the edge of Mesquite Lake on Old Traction Road; about 315 meters north and 565 meters east of the southwest corner of sec. 23, T. 18 N., R. 13 E., San Bernardino Base and Meridian; USGS Mesquite Lake, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 29 minutes, 58 seconds N. and long. 115 degrees, 32 minutes, 59 seconds W.; UTM 11S, 631260e, 3947899n; DTM: NAD83.

Surface rock fragments: 15 percent fine gravel, 65 percent medium and coarse gravel, and 5 percent cobbles

A—0 to 3 centimeters (0 to 1 inch); pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; moderate thick platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots throughout; common very fine tubular and many very fine vesicular pores; 3 percent fine gravel and 7 percent medium and coarse gravel; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bk—3 to 10 centimeters (1 to 4 inches); pale brown (10YR 6/3) gravelly loamy sand, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium and many very fine roots throughout; common very fine tubular pores; 5 percent distinct white (10YR 8/1) coats of calcium carbonate on undersides of rock fragments; 10 percent fine gravel and 20 percent medium and coarse gravel; violently effervescent (30 percent calcium carbonate equivalent); moderately alkaline (pH 8.2); clear wavy boundary.

Bkq—10 to 115 centimeters (4 to 45 inches); pale brown (10YR 6/3) extremely gravelly loamy sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and common very fine roots throughout; 1 percent distinct silica on undersides of rock fragments; 40 percent distinct white (10YR 8/1) coats

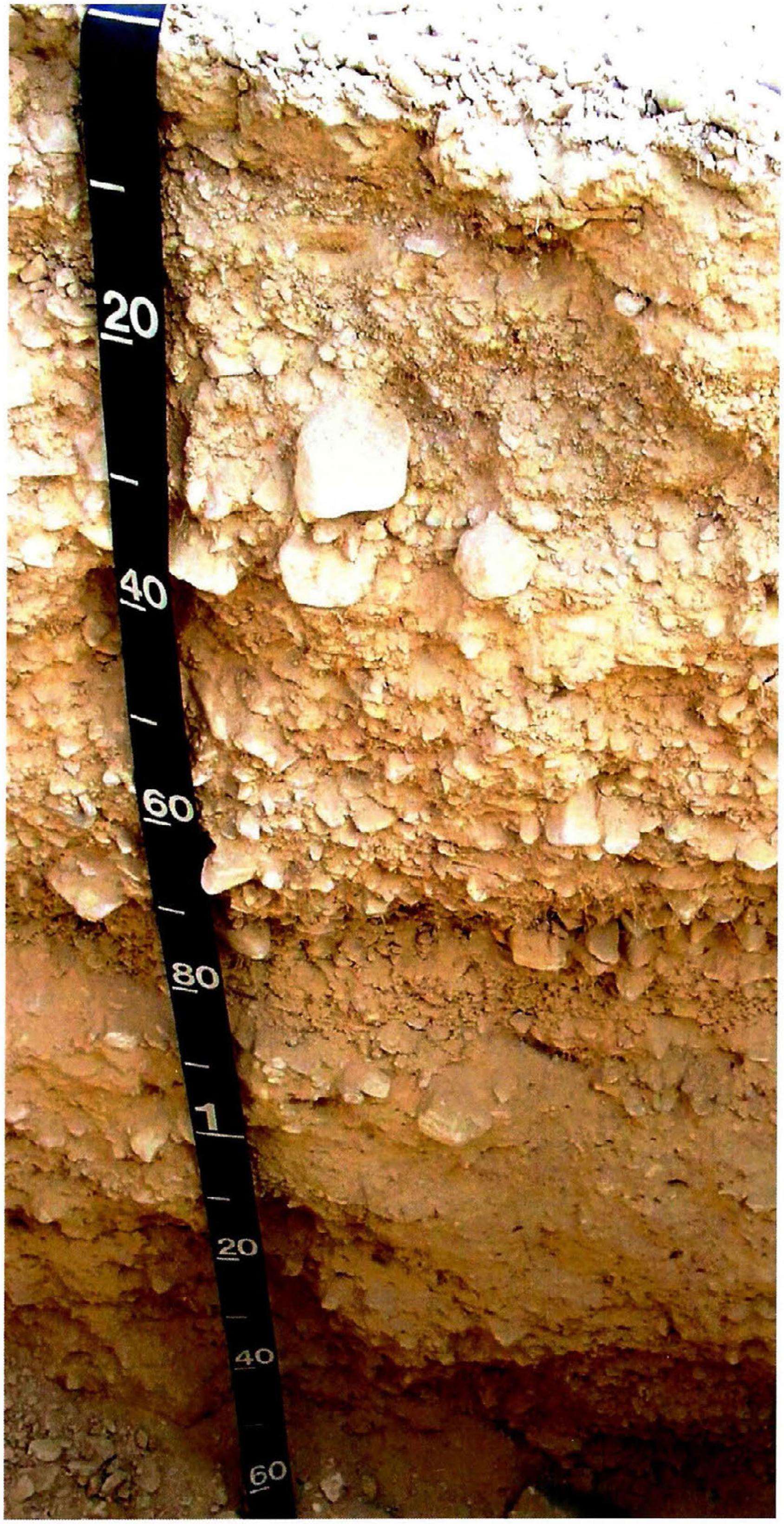

Figure 8.—A typical profile of Colosseum soil in an area of Colosseum association, 2 to 4 percent slopes.

of calcium carbonate on rock fragments; 20 percent fine gravel and 50 percent medium and coarse gravel; violently effervescent (40 percent calcium carbonate equivalent); moderately alkaline (pH 8.4); clear wavy boundary.

2Bkq—115 to 150 centimeters (45 to 59 inches); light yellowish brown (10YR 6/4) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; massive parting to weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots throughout; 1 percent distinct yellowish brown (10YR 5/4) silica on undersides of rock fragments; 4 percent distinct white (10YR 8/1) coats of carbonate on undersides of rock fragments; 15 percent fine gravel and 25 percent medium and coarse gravel; violently effervescent (35 percent calcium carbonate equivalent); moderately alkaline (pH 8.4).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative from July to September following summer convection storms; typic aridic moisture regime
Soil temperature: 19 to 22 degrees C
Depth to a calcic horizon: 8 to 50 centimeters

Control section
Clay content: 2 to 8 percent
Rock fragments: Averages 55 to 80 percent, including 30 to 80 percent gravel and 0 to 7 percent cobbles
Calcium carbonate equivalent in the smaller-than-20-millimeters fraction: 40 to 60 percent

A horizon
Value: 6 or 7 dry, 4 or 5 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Sand, fine sandy loam, loam, or sandy loam
Clay content: 2 to 15 percent
Rock fragments: 10 to 60 percent, mainly gravel
Reaction: Slightly alkaline or moderately alkaline

Bk or Bk1 horizon
Value: 6 or 7 dry, 4 or 5 moist
Chroma: 3 or 4 moist
Texture of the fine-earth fraction: Sand or loamy sand
Clay content: 2 to 8 percent
Rock fragments: 35 to 70 percent, mainly gravel
Calcium carbonate equivalent in the fine-earth fraction: 10 to 30 percent

Bkq or Bk2 horizon
Value: 6 or 7 dry, 4 or 5 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Sand, coarse sand, or loamy sand
Clay content: 2 to 7 percent
Rock fragments: 35 to 85 percent, mainly gravel
Calcium carbonate equivalent in the fine-earth fraction: 25 to 45 percent
Silica: 0 to 2 percent, visible, on undersides of rock fragments

2Bkq horizon
Value: 5 or 6 dry, 4 or 5 moist
Texture of the fine-earth fraction: Sandy loam, fine sandy loam, or loamy sand
Clay content: 4 to 10 percent
Rock fragments: 35 to 70 percent, mainly gravel
Calcium carbonate equivalent in the fine-earth fraction: 10 to 35 percent

Silica: 1 to 2 percent, visible coats, on undersides of rock fragments
Reaction: Moderately alkaline or strongly alkaline
Electrical conductivity: 0 to 10 dS/m
Sodium adsorption ratio: 0 to 20

Copperworld Series

The Copperworld series consists of soils that are very shallow or shallow to bedrock, are somewhat excessively drained, and formed in residuum and colluvium derived from metamorphic rocks. These soils are on mountains (fig. 9). Slopes range from 30 to 60 percent. The mean annual precipitation is about 175 millimeters, and the mean annual air temperature is about 15 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Loamy, mixed, superactive, thermic Lithic Haplargids

Typical Pedon

Copperworld gravelly sandy loam in an area of Copperworld association, 30 to 60 percent slopes (fig. 10); at an elevation of 1,360 meters; in San Bernardino County, California; about 2.7 kilometers north and 2.7 kilometers east of the junction of Mountain Pass Road and Interstate 15; 215 meters north and 390 meters east of the southwest corner of sec. 20, T. 16 N., R. 14 E., San Bernardino Base and Meridian; USGS Mineral Hill, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 29 minutes, 32 seconds N. and long. 115 degrees, 29 minutes, 57 seconds W.; UTM 11S, 636136e, 3928673n; DTM: NAD83. When described, the soil was moist throughout.

Surface rock fragments: 15 percent fine gravel, 55 percent medium and coarse gravel, 10 percent cobbles, 3 percent stones, and 3 percent boulders

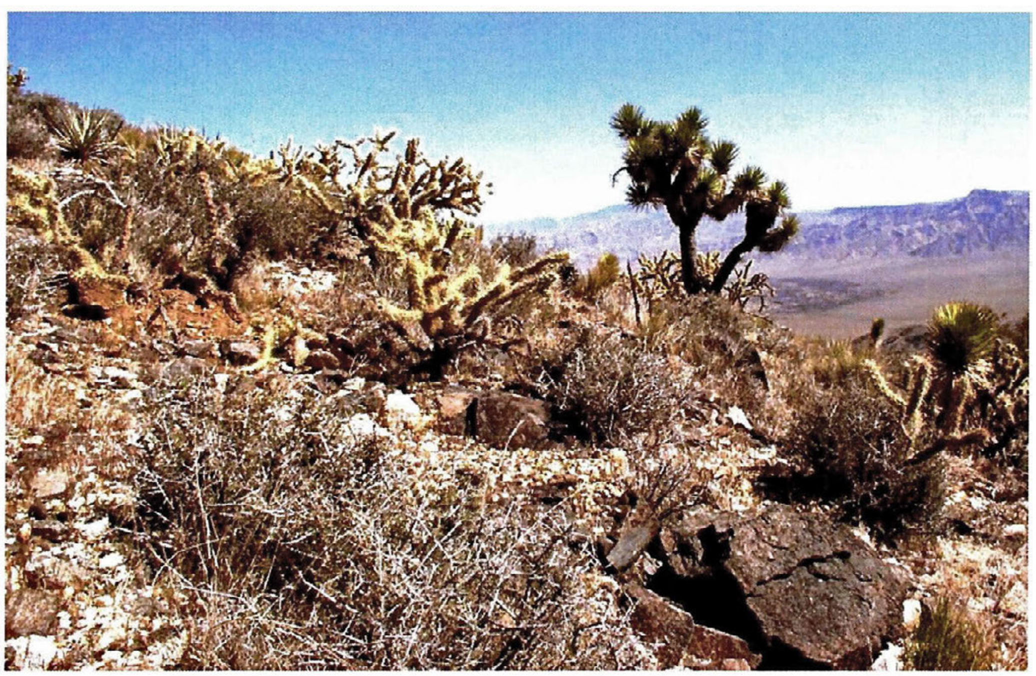

Figure 9.—A typical area of Copperworld soils.

Figure 10.—A typical profile of Copperworld soil in an area of Copperworld association, 30 to 60 percent slopes.

A—0 to 3 centimeters (0 to 1 inches); gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots throughout; common very fine irregular pores; 7 percent fine gravel, 8 percent medium and coarse gravel, 2 percent cobbles, and 1 percent stones; very slightly effervescent; neutral (pH 7.2); diffuse smooth boundary.

Bt—3 to 15 centimeters (1 to 6 inches); gravelly sandy loam, dark brown (10YR 3/3) moist; massive parting to weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots throughout; common very fine irregular pores; 3 percent distinct brown (7.5YR 5/4), dry, clay films on rock fragments; 5 percent fine gravel, 10 percent medium and coarse gravel, 4 percent cobbles, and 1 percent stones; slightly alkaline (pH 7.4); abrupt irregular boundary.

R—15 centimeters (6 inches); indurated metamorphic bedrock; roots in fractures, which are greater than 10 centimeters apart.

The Copperworld, cool, taxadjunct varies from the series concept in that it is has a cooler soil temperature regime (mesic instead of thermic). Due to the small extent of these soils in the survey area, the taxadjunct was not correlated to another series at this time. The cooler soil temperature affects the vegetation on these soils, but the soils are not in a grazed area, so use and management are not affected.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative following summer convection storms; typic aridic moisture regime
Soil temperature: 15 to 20 degrees C
Depth to lithic contact: 10 to 35 centimeters

Control section
Clay content: Averages 10 to 18 percent
Rock fragments: Averages 11 to 28 percent, mainly gravel

A horizon
Hue: 7.5YR or 10YR
Value: 3 to 5 dry, 3 or 4 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Loamy sand or sandy loam
Clay content: 5 to 11 percent
Rock fragments: Averages 15 to 35 percent, mainly gravel
Reaction: Neutral to moderately alkaline

Bt horizon
Hue: 5YR, 7.5YR, or 10YR
Value: 3 to 5 dry, 3 or 4 moist
Chroma: 3 to 6
Clay content: 10 to 18 percent
Rock fragments: Averages 10 to 35 percent, mainly gravel
Reaction: Neutral or slightly alkaline

Haleburu Series

The Haleburu series consists of soils that are very shallow and shallow to bedrock, are well drained, and formed in colluvium and residuum derived mainly from volcanic sources. These soils are on mountains and hills. Slopes range from 4 to 75 percent. The mean annual precipitation is about 125 millimeters, and the mean annual air temperature is about 19 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, calcareous, thermic Lithic Torriorthents

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Haleburu extremely gravelly sandy loam, 15 to 50 percent slopes; at an elevation of 813 meters; in Clark County, Nevada; about 14.5 kilometers southeast of Searchlight and 3.2 kilometers east of Mammoth Mine; in the north end of the Newberry Mountains; about 259 meters north and 503 meters east of the projected southwest corner of sec. 22, T. 29 S., R. 64 E., Mount Diablo Base and Meridian;

USGS Fourth of July Mountain, Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 24 minutes, 8 seconds N. and long. 114 degrees, 49 minutes, 37 seconds W.; UTM 11S, 697335e, 3919817n; DTM: NAD83.

Surface rock fragments: 75 percent gravel, 13 percent cobbles, and 7 percent stones

A—0 to 5 centimeters (0 to 2 inches); pale brown (10YR 6/3) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 65 percent gravel, 10 percent cobbles, and 5 percent stones; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bw—5 to 20 centimeters (2 to 8 inches); pale brown (10YR 6/3) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; slightly effervescent; 40 percent gravel; moderately alkaline (pH 8.4); clear smooth boundary.

Bk—20 to 28 centimeters (8 to 11 inches); pale brown (10YR 6/3) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; few thin calcium carbonate coats on the bottoms of coarse fragments; 55 percent gravel; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

R—28 centimeters (11 inches); hard, unweathered rhyolite bedrock.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative from July to October following convection storms
Soil temperature: 17 to 22 degrees C
Depth to lithic contact: 10 to 36 centimeters (4 to 14 inches)

Control section
Clay content: 6 to 18 percent
Rock fragments: Averages 35 to 60 percent in the control section; typically 65 to 85 percent in the surface horizon
Effervescence: Slightly effervescent to violently effervescent
Reaction: Slightly alkaline to strongly alkaline

A horizon
Hue: 10YR or 7.5YR
Value: 5 to 7 dry, 3 to 5 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Sandy loam or loam
Calcium carbonate equivalent in the fine-earth fraction: 0 to 5 percent
Electrical conductivity: 0 to 2 dS/m
Sodium adsorption ratio: 0 to 5

Bw horizon
Chroma: 2 to 4 dry or moist
Texture of the fine-earth fraction: Fine sandy loam, sandy loam, or loam
Consistence: Soft or slightly hard, nonsticky or slightly sticky, nonplastic or slightly plastic
Calcium carbonate equivalent in the fine-earth fraction: 0 to 5 percent
Electrical conductivity: 0 to 2 dS/m
Sodium adsorption ratio: 0 to 4

Bk horizon
Hue: 10YR or 7.5YR
Value: 5 to 7 dry, 3 to 5 moist
Chroma: 2 to 4 dry or moist
Texture of the fine-earth fraction: Fine sandy loam, sandy loam, or loam
Structure: Massive or subangular blocky
Consistence: Soft or slightly hard, nonsticky or slightly sticky, nonplastic or slightly plastic
Calcium carbonate equivalent in the fine-earth fraction: 5 to 10 percent
Electrical conductivity: 0 to 2 dS/m
Sodium adsorption ratio: 0 to 5
Other features: Few thin coats of calcium carbonate on undersides of rock fragments

Hartpeak Series

The Hartpeak series consists of moderately deep, well drained soils that formed in residuum and colluvium derived from mixed volcanic sources. These soils are on backslopes of hills (fig. 11). Slopes range from 15 to 50 percent. The mean annual precipitation is about 200 millimeters, and the mean annual air temperature is about 14 degrees C. The frost-free period is 210 to 240 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic Ustic Haplargids

Typical Pedon

Hartpeak extremely cobbly loam in an area of Hartpeak-Highland association, 15 to 50 percent slopes (fig. 12); at an elevation of 1,411 meters; in San Bernardino County, California; about 23 kilometers southwest of Searchlight, Nevada, in the

Figure 11.—A typical area of Hartpeak soils in the Crescent Peak BLM Grazing Allotment.

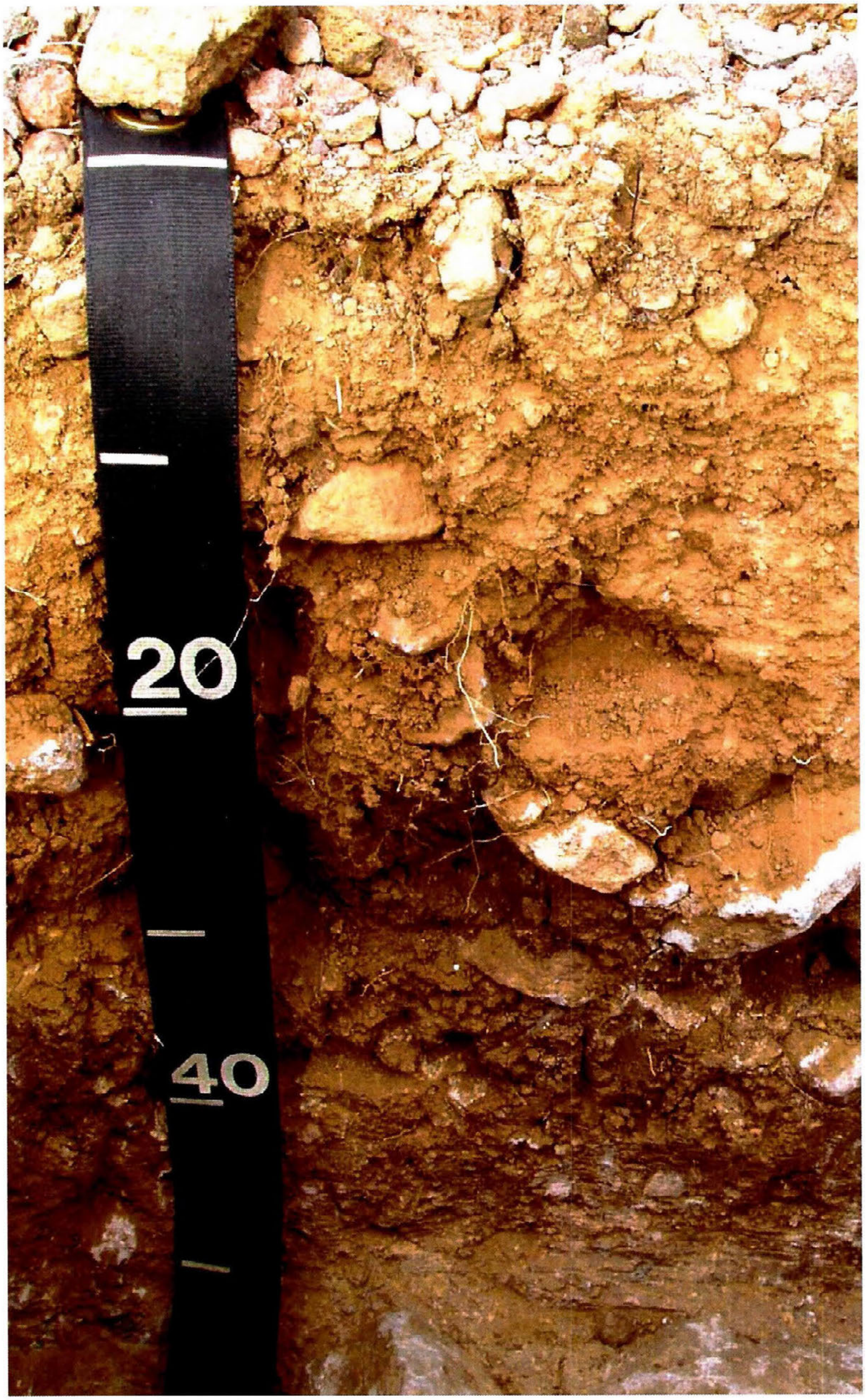

Figure 12.—A typical profile of Hartpeak soil in an area of Hartpeak-Highland association, 15 to 50 percent slopes.

Castle Mountains; about 3 kilometers west and 1 kilometer south of Hart Peak; about 335 meters north and 70 meters west of the southeast corner of sec. 35, T. 15 N., R. 17 E., San Bernardino Base and Meridian; USGS Hart Peak, California-Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 20 minutes, 2.5 seconds N. and long. 115 degrees, 6 minutes, 37.4 seconds W.; UTM 11S, 671736e, 3911726n; DTM: NAD83. When described, the soil was dry throughout.

Surface rock fragments: About 50 percent gravel, 25 percent cobbles, 3 percent stones, and 1 percent boulders

A—0 to 6 centimeters (0 to 2 inches); brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine and medium vescular and tubular pores; 5 percent fine gravel, 35 percent medium and coarse gravel, 25 percent cobbles, and 3 percent stones; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bw—6 to 16 centimeters (2 to 6 inches); brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; moderately hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine and few fine tubular pores; 5 percent fine gravel, 20 percent medium and coarse gravel, 20 percent cobbles, and 1 percent stones; slightly alkaline (pH 7.6); clear wavy boundary.

Btk1—16 to 25 centimeters (6 to 10 inches); brown (7.5YR 4/4) very cobbly loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; moderately hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine tubular pores; 30 percent faint clay films on all faces of peds, surfaces of pores, and around rock fragments; 40 percent prominent white (10YR 8/1) coats of calcium carbonate on undersides of rock fragments; 5 percent fine gravel, 20 percent medium and coarse gravel, 20 percent cobbles, and 1 percent stones; slightly alkaline (pH 7.8); clear wavy boundary.

Btk2—25 to 37 centimeters (10 to 15 inches); brown (7.5YR 4/4) very cobbly clay loam, dark brown (7.5YR 3/4) moist; moderate medium angular blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine roots; many very fine and few fine tubular pores; 70 percent distinct clay films on all faces of peds, surfaces of pores, and rock fragments; 40 percent prominent white (10YR 8/1) coats of calcium carbonate on undersides of rock fragments; 5 percent fine gravel, 20 percent medium and coarse gravel, 20 percent cobbles, and 1 percent stones; moderately alkaline (pH 8.0); clear wavy boundary.

Btkq—37 to 55 centimeters (15 to 22 inches); brown (7.5YR 4/4) very cobbly clay loam, brown (7.5YR 4/4) moist; moderate medium angular blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine roots; many very fine and few fine tubular pores; 70 percent distinct clay films on all faces of peds, surfaces of pores, and rock fragments; 40 percent prominent white (10YR 8/1) coats of calcium carbonate on undersides of rock fragments; 3 percent prominent yellowish brown (10YR 5/6) coats of silica on undersides of rock fragments; 5 percent fine gravel, 20 percent medium and coarse gravel, 20 percent cobbles, and 1 percent stones; slightly effervescent; moderately alkaline (pH 8.0); very abrupt irregular boundary.

R—55 centimeters (22 inches); welded, volcanic tuff bedrock.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part from December to March and intermittently moist for 10 to 20 days from July to October following summer convection storms; aridic bordering on ustic moisture regime

Soil temperature: 15 to 18 degrees C
Depth to an argillic horizon: 4 to 20 centimeters
Depth to lithic contact: 50 to 75 centimeters

Control section
Rock fragments: 35 to 65 percent, including 15 to 30 percent gravel, 15 to 30 percent cobbles, and 0 to 7 percent stones
Clay content: Averages 25 to 35 percent

A horizon
Texture of the fine-earth fraction: Loam or silt loam
Rock fragments: 50 to 65 percent, including 30 to 40 percent gravel, 10 to 25 percent cobbles, and 1 to 25 percent stones
Reaction: Neutral or slightly alkaline

Bw horizon
Texture of the fine-earth fraction: Loam or silt loam
Structure: Fine or medium
Rock fragments: 35 to 65 percent, including 15 to 30 percent gravel, 15 to 30 percent cobbles, and 0 to 7 percent stones
Reaction: Neutral or slightly alkaline
Other features: Nondiagnostic clay films in some pedons

Btk and Btkq horizons
Hue: 10YR or 7.5YR
Value: 4 to 6 dry, 3 to 5 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Clay loam or loam
Clay content: Averages 25 to 35 percent, ranges from 18 to 35 percent
Structure: Weak to strong, fine or medium, angular blocky or subangular blocky
Consistence: Moderately hard to very hard, very friable or friable, slightly sticky or moderately sticky, slightly plastic or moderately plastic
Rock fragments: 35 to 65 percent, including 15 to 30 percent gravel, 15 to 30 percent cobbles, and 0 to 7 percent stones
Reaction: Slightly alkaline or moderately alkaline
Other features: In some pedons, no secondary calcium carbonate and/or silica

Haymont Series

The Haymont series consists of very deep, well drained soils that formed in alluvium derived from mixed rock sources. These soils are on fan skirts, alluvial flats, and lake plains. Slopes range from 0 to 4 percent. The mean annual precipitation is about 100 millimeters, and the mean annual air temperature is about 17 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Coarse-silty, mixed, superactive, calcareous, thermic Typic Torriorthents

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Haymont loam, 0 to 2 percent slopes; at an elevation of 792 meters; in Clark County, Nevada; about 3.2 kilometers southeast of the Sandy Airport in Mesquite Valley; about 533 meters south and 346 meters west of the northeast corner of sec. 17, T. 25 S., R. 57 E., San Bernardino Base and Meridian; USGS Shenandoah Peak, Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 46 minutes, 32 seconds

N. and long. 115 degrees, 36 minutes, 16 minutes, west; UTM 11S, 626137e, 3959953n; DTM: NAD83.

A1—0 to 5 centimeters (0 to 2 inches); pale brown (10YR 6/3) loam, dark yellowish brown (10YR 4/4) moist; strong very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine interstitial and few fine tubular pores; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

A2—5 to 13 centimeters (2 to 5 inches); pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; strong very fine granular and thin platy structure; slightly hard, very friable, moderately sticky and moderately plastic; common very fine roots; many very fine and few fine interstitial and common very fine tubular pores; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

Cn—13 to 33 centimeters (5 to 13 inches); very pale brown (10YR 7/3) weakly stratified silt loam, yellowish brown (10YR 5/4) moist; moderate medium platy structure; slightly hard, very friable, moderately sticky and slightly plastic; common very fine and few fine and medium roots; few very fine interstitial and common very fine and fine and few medium tubular pores; violently effervescent; very strongly alkaline (pH 9.4); clear wavy boundary.

Ckny—33 to 74 centimeters (13 to 29 inches); very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine tubular pores; few fine soft filaments of calcium carbonate; few fine crystals of gypsum; violently effervescent; very strongly alkaline (pH 9.4); clear smooth boundary.

C—74 to 152 centimeters (29 to 60 inches); very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; violently effervescent; strongly alkaline (pH 8.8).

Range in Characteristics

Soil moisture control section: Usually dry, moist in the upper part for a short period in late winter and early spring and for 10 to 20 days following summer convection storms from July to mid-October; typic aridic moisture regime
Soil temperature: 15 to 18 degrees C
Calcium carbonate equivalent: 10 to 35 percent

Control section
Clay content: 5 to 18 percent, including less than 15 percent fine sand or coarser
Rock fragments: Less than 5 percent

A horizon
Value: 6 or 7 dry, 4 to 6 moist
Chroma: 3 or 4 moist or dry

C horizon
Value: 5 to 7 dry, 4 or 5 moist
Chroma: 3 or 4 dry, 4 or 5 moist
Texture of the fine-earth fraction: Dominantly very fine sandy loam with less than 15 percent fine sand or coarser or silt loam; stratified fine sandy loam, silt loam, loam, and very fine sandy loam below a depth of 40 inches in some pedons
Clay content: 5 to 18 percent
Structure: Massive, platy, or subangular blocky
Consistence: Soft or slightly hard, nonsticky or slightly sticky, nonplastic or slightly plastic

Reaction: Moderately alkaline to very strongly alkaline
Other features: 1 to 3 percent visible calcium carbonate or gypsum in some pedons

Highland Series

The Highland series consists of moderately deep, well drained soils that formed in colluvium and residuum derived from volcanic sources. These soils are on backslopes of mountains. Slopes range from 15 to 50 percent. The mean annual precipitation is about 150 millimeters, and the mean annual air temperature is about 16 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic Typic Haplargids

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Highland extremely gravelly loam, 15 to 50 percent slopes; at an elevation of 1,004 meters; in Clark County, Nevada; about 16.1 kilometers northwest of Searchlight, Nevada, on the northeast side of the Highland Range; about 5 meters west and 869 meters north of the southwest corner of sec. 27, T. 26 N., R. 62 E., Mount Diablo Base and Meridian; USGS McCullough Mountain NE, Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 39 minutes, 20 seconds N. and long. 115 degrees, 2 minutes, 25 seconds W.; UTM 11S, 677400e, 3947516n; DTM: NAD83.

Surface rock fragments: 65 percent gravel, 20 percent cobbles, and 2 percent stones

A—0 to 8 centimeters (0 to 3 inches); pale brown (10YR 6/3) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and common fine vesicular pores; 55 percent gravel, 20 percent cobbles, and 2 percent stones; slightly alkaline (pH 7.6); abrupt wavy boundary.

Bt—8 to 33 centimeters (3 to 13 inches); brown (7.5YR 5/4) very cobbly loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; many very fine and fine and few medium roots; many very fine tubular pores; common faint colloid stains on mineral grains; 35 percent gravel and 20 percent cobbles; slightly alkaline (pH 7.8); abrupt wavy boundary.

2Btkq—33 to 66 centimeters (13 to 26 inches); light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 4/4) moist; strong medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; common very fine and fine tubular pores; common faint clay films lining pores and on faces of peds; common fine seams of calcium carbonate; many distinct coats of calcium carbonate and silica on rock fragments; 36 percent gravel; slightly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

2Bkq—66 to 100 centimeters (26 to 40 inches); brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 3/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine, common fine, and few medium tubular pores; few fine seams of calcium carbonate; few thin coats of calcium carbonate and silica on undersides of rock fragments; 35 percent gravel; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

R—100 centimeters (40 inches); hard, slightly fractured bedrock.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative from July to October following convection storms; typic aridic moisture regime

Soil temperature: 15 to 18 degrees C
Depth to an argillic horizon: 5 to 36 centimeters (2 to 14 inches)
Depth to lithic contact: 76 to 100 centimeters (30 to 40 inches)

Control section
Clay content: 18 to 35 percent
Rock fragments: 35 to 60 percent

Bt or Bk horizon
Hue: 10YR or 7.5YR
Value: 5 or 6 dry, 3 or 4 moist
Chroma: 3 or 4
Clay content: 18 to 27 percent
Rock fragments: 35 to 60 percent, dominantly cobbles or gravel
Calcium carbonate equivalent: 1 to 5 percent
Effervescence: Noneffervescent to slightly effervescent
Reaction: Slightly alkaline or moderately alkaline

2Btkq or 2Btk horizon
Hue: 10YR or 7.5YR
Value: 5 or 6 dry
Chroma: 3 or 4
Texture of the fine-earth fraction: Loam or clay loam
Clay content: 18 to 35 percent
Rock fragments: 35 to 60 percent, mainly gravel
Calcium carbonate equivalent: 1 to 10 percent
Effervescence: Slightly effervescent to violently effervescent

2Bkq horizon
Clay content: 6 to 12 percent
Rock fragments: 35 to 60 percent
Structure: Massive or subangular blocky

Hoppswell Series

The Hoppswell series consists of very deep, well drained soils that formed in alluvium derived from igneous sources. These soils are on fan remnants. Slopes range from 2 to 15 percent. The mean annual precipitation is about 200 millimeters, and the mean annual air temperature is about 16 degrees C. The frost-free period is 180 to 240 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic Ustic Haplargids

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Hoppswell extremely gravelly sandy loam in an area of Hoppswell-Ustidur association, 4 to 30 percent slopes; at an elevation of 1,050 meters; in Clark County, Nevada; about 9 miles southeast of McCullough Pass between the McCullough Range and the Highland Range on the west side of the power-line road; about 1,280 feet west and 625 feet north of the southeast corner of sec. 6, T. 27 S., R. 62 E., Mount Diablo Base and Meridian; USGS Highland Spring, Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 37 minutes, 4 seconds N. and long. 115 degrees, 5 minutes, 3 seconds W.; UTM 11S, 673508e, 3943247n; DTM: NAD83.

Surface rock fragments: 70 percent gravel, 5 percent cobbles, and 3 percent stones

A—0 to 5 centimeters (0 to 2 inches); brown (7.5YR 5/4) extremely gravelly sandy loam, dark brown (7.5YR 3/4) moist; moderate medium and thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine vesicular pores; 70 percent gravel, 5 percent cobbles, and 3 percent stones; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bt—5 to 38 centimeters (2 to 15 inches); yellowish red (5YR 5/6) very gravelly sandy clay loam, yellowish red (5YR 4/6) moist; moderate fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine interstitial pores; many distinct clay films on faces of peds and few faint clay films lining pores; 50 percent gravel; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk—38 to 163 centimeters (15 to 64 inches); white (10YR 8/1) stratified extremely gravelly coarse sand to very gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores and few medium tubular pores; many thin coats of calcium carbonate on undersides of coarse fragments; many thin filaments of calcium carbonate on tops of coarse fragments; average 60 percent gravel; violently effervescent; strongly alkaline (pH 8.6).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part from December to March and intermittently moist for 10 to 20 days from July to October following summer convection storms; aridic bordering on ustic moisture regime
Soil temperature: 15 to 18 degrees C
Depth to the base of an argillic horizon: 28 to 63 centimeters (11 to 25 inches)

Control section
Clay content: 20 to 30 percent
Rock fragments: 35 to 60 percent, mainly gravel

A horizon
Hue: 10YR or 7.5YR
Value: 5 or 6 dry

Bt horizon
Hue: 7.5YR or 5YR
Value: 4 or 5 dry
Chroma: 4 to 6 dry
Structure: Weak or moderate, fine or medium, subangular blocky or massive
Consistence: Slightly hard or hard, friable or very friable, nonsticky to moderately sticky, nonplastic to moderately plastic

Bk horizons
Hue: 10YR or 7.5YR
Value: 6 to 8 dry, 4 or 5 moist
Chroma: 1 to 4 dry, 3 or 4 moist
Clay content: 3 to 12 percent
Texture of the fine-earth fraction: Typically dominated by loamy sand
Consistence: Soft to hard, friable to firm, nonsticky or slightly sticky, nonplastic or slightly plastic
Rock fragments: 50 to 70 percent, mainly gravel
Effervescence: Strongly effervescent or violently effervescent
Reaction: Moderately alkaline or strongly alkaline
Calcium carbonate equivalent in the fine-earth fraction: 1 to 10 percent
Other features: Common to many coats of calcium carbonate on coarse fragments

and many large irregular pockets of disseminated calcium carbonate in some pedons

Hypoint Series

The Hypoint series consists of very deep, somewhat excessively drained soils that formed in mixed alluvium. These soils are on sand sheets over fan aprons, on fan skirts, and on alluvial fans. Slopes range from 0 to 8 percent. The mean annual precipitation is about 150 millimeters, and the mean annual air temperature is about 19 degrees C. The frost-free period is 240 to 300 days.

Taxonomic class: Sandy, mixed, thermic Typic Torriorthents

Typical Pedon

Hypoint loamy fine sand in an area of Hypoint-Pipeflat association, 2 to 8 percent slopes; at an elevation of 884 meters; 140 meters north and 420 meters east of the southwest corner of sec. 18, T. 16 N., R. 16 E., San Bernardino Base and Meridian; USGS Desert, Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 30 minutes, 20.10 seconds N. and long. 115 degrees, 18 minutes, 11.80 seconds W.; UTM 11S, 653879e, 3930438n; DTM: NAD83.

Surface rock fragments: 5 percent fine gravel

A—0 to 6 centimeters (0 to 2.5 inches); light yellowish brown (10YR 6/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; weak thick platy structure; loose, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; 1 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

AB—6 to 16 centimeters (2.5 to 6.5 inches); light yellowish brown (10YR 6/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and common fine roots; common very fine interstitial pores; 3 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bk—16 to 61 centimeters (6.5 to 24 inches); light yellowish brown (10YR 6/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine interstitial and tubular pores; few distinct coats of silica and carbonate on undersides of rock fragments; 5 percent gravel and 1 percent cobbles; very slightly effervescent; moderately alkaline (pH 8.1); clear wavy boundary.

2Bk—61 to 160 centimeters (24 to 63 inches); light yellowish brown (10YR 6/4) stratified sand to very gravelly sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine roots; common very fine interstitial pores; few distinct coats of silica and carbonate on undersides of rock fragments; 17 percent fine gravel, 30 percent medium and coarse gravel, and 10 percent cobbles; slightly effervescent; moderately alkaline (pH 8.1).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative from July to October following convection storms

Soil temperature: 18 to 22 degrees C

Control section

Clay content: 1 to 8 percent

Rock fragments: Averages 15 to 35 percent

Effervescence: Noneffervescent to slightly effervescent

A horizon
Value: 6 or 7 dry
Chroma: 2 to 4

Langwell Series

The Langwell series consists of very shallow and shallow, somewhat excessively drained soils that formed in metamorphic colluvium and residuum. These soils are on mountains, hills, and pediments. Slopes range from 8 to 50 percent. The mean annual precipitation is about 135 millimeters, and the mean annual air temperature is about 15 degrees C. The frost-free period is 240 to 270 days.

Taxonomic class: Loamy, mixed, superactive, calcareous, thermic Lithic Torriorthents

Typical Pedon

Langwell gravelly loamy sand, 30 to 50 percent slopes; at an elevation of 1,286 meters; in San Bernardino County, California; 515 meters east and 450 meters south of the northwest corner of sec. 25, T. 18 N., R. 12 E., San Bernardino Base and Meridian; USGS Mesquite Mountain, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 37 minutes, 35.00 seconds N. and long. 115 degrees, 39 minutes, 6.00 seconds W.; UTM 11S, 622086e, 3943345n; DTM: NAD83.

Surface rock fragments: 20 percent fine gravel, 55 percent medium and coarse gravel, 17 percent cobbles, and 3 percent stones

A—0 to 5 centimeters (0 to 2 inches); pale brown (10YR 6/3) gravelly loamy sand, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots throughout; common fine tubular, fine interstitial, and very fine interstitial pores; 30 percent gravel and 3 percent cobbles; slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

C—5 to 13 centimeters (2 to 5 inches); pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine roots throughout; common fine tubular and interstitial and common very fine interstitial pores; 30 percent gravel and 1 percent cobbles; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

R—13 centimeters (5 inches); pale brown (10YR 6/3), indurated, hard metamorphic bedrock, brown (10YR 4/3) moist; strongly effervescent.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative following convection storms; typic aridic moisture regime
Soil temperature: 17 to 22 degrees C
Depth to lithic contact: 10 to 36 centimeters

Control section
Clay content: 8 to 18 percent
Rock fragments: 15 to 35 percent

A horizon
Value: 5 to 7 dry, 4 or 5 moist
Chroma: 2 to 4 dry or moist
Rock fragments: 20 to 40 percent, including 10 to 35 percent gravel and 0 to 30 percent cobbles
Reaction: Slightly alkaline or moderately alkaline

C Horizon
Value: 5 to 7 dry, 4 or 5 moist
Chroma: 2 to 4 dry or moist
Rock fragments: 10 to 30 percent, including 10 to 30 percent gravel and 0 to 10 percent cobbles
Reaction: Slightly alkaline or moderately alkaline

R layer
Unweathered, slightly fractured to highly fractured metamorphic bedrock; very high to extremely high excavation difficulty

Lithic Ustic Haplargids

Lithic Ustic Haplargids are shallow, somewhat excessively drained soils that formed in metamorphic colluvium over residuum. These soils are on mountains and hills. Slopes range from 30 to 60 percent. The mean annual precipitation is about 175 millimeters, and the mean annual air temperature is about 12 degrees C. The frost-free period is 160 to 200 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, mesic Lithic Ustic Haplargids

Typical Pedon

Lithic Ustic Haplargids in an area of Copperworld-Lithic Ustic Haplargids association, 30 to 60 percent slopes; at an elevation of 1,729 meters; in San Bernardino County, California; 150 meters east and 310 meters south of the northwest corner of sec. 35, T. 17 N., R. 13 E., San Bernardino Base and Meridian; lat. 35 degrees, 31 minutes, 14.00 seconds N. and long. 115 degrees, 33 minutes, 15.00 seconds W.; UTM 11S, 631097e, 3931741n; DTM: NAD83.

Surface rock fragments: 15 percent fine gravel and 20 percent medium and coarse gravel

A—0 to 3 centimeters (0 to 1 inch); dark yellowish brown (10YR 4/4) loamy sand, very dark grayish brown (10YR 3/2) moist; soft, very friable, nonsticky and nonplastic; many fine and many very fine roots; common medium and common fine irregular pores; 3 percent gravel; neutral (pH 6.8); diffuse smooth boundary.

Bw1—3 to 11 centimeters (1 to 4 inches); brown (7.5YR 5/3) sandy loam, dark brown (7.5YR 3/3) moist; moderate very coarse and coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine and medium irregular pores; 3 percent fine gravel and 10 percent coarse and medium gravel; neutral (pH 7.0); clear wavy boundary.

Bw2—11 to 26 centimeters (4 to 10 inches); brown (7.5YR 5/3) gravelly sandy loam, dark brown (7.5YR 3/3) moist; moderate coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; common fine and common medium tubular pores; 12 percent fine gravel and 8 percent medium and coarse gravel; neutral (pH 7.2); clear wavy boundary.

Bt—26 to 38 centimeters (10 to 15 inches); brown (7.5YR 4/4) very gravelly sandy loam, very dark brown (7.5YR 2.5/3) moist; moderate coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; few distinct clay films between sand grains and on all faces of peds; 20 percent fine gravel and 20 percent medium and coarse gravel; neutral (pH 7.2); very abrupt wavy boundary.

R—38 to 46 centimeters (15 to 18 inches); indurated metasedimentary bedrock, fractured at intervals of 10 to less than 45 centimeters; very rigid.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part from December to March and intermittently moist for 10 to 20 days from July to October following summer convection storms; aridic bordering on ustic moisture regime
Soil temperature: 12 to 15 degrees C
Depth to lithic contact: 36 to 50 centimeters

Control section
Clay content: 12 to 18 percent
Rock fragments: 35 to 50 percent, including 30 to 40 percent gravel and 0 to 5 percent cobbles

A horizon
Clay content: 6 to 10 percent
Rock fragments: 5 to 15 percent, mainly gravel

Bw horizon
Hue: 10YR or 7.5YR
Clay content: 6 to 8 percent
Structure: Coarse or very coarse
Rock fragments: 10 to 35 percent, mainly gravel

Bt horizon
Hue: 10YR or 7.5YR
Clay content: 12 to 30 percent
Rock fragments: 35 to 50 percent, including 30 to 40 percent gravel and 0 to 5 percent cobbles

Lithic Ustic Haplocalcids

Lithic Ustic Haplocalcids are shallow, somewhat excessively drained soils that formed in limestone colluvium and residuum. These soils are on mountains and hills. Slopes range from 30 to 60 percent. The mean annual precipitation is about 160 millimeters, and the mean annual air temperature is about 12 degrees C. The frost-free period is 160 to 200 days.

Taxonomic class: Loamy-skeletal, carbonatic, mesic Lithic Ustic Haplocalcids

Typical Pedon

Lithic Ustic Haplocalcids gravelly sandy loam, 30 to 60 percent slopes; at an elevation of 1,750 meters; in San Bernardino County, California; 515 meters south and 160 meters west of the northeast corner of sec. 34, T. 17 N., R. 13 E., San Bernardino Base and Meridian; lat. 35 degrees, 31 minutes, 7.00 seconds N. and long. 115 degrees, 33 minutes, 27.00 seconds W.; UTM 11S, 630804e, 3931523n; DTM: NAD83.

Surface rock fragments: 15 percent fine gravel, 35 percent medium and coarse gravel, 30 percent cobbles, and 5 percent stones

A1—0 to 3 centimeters (0 to 1 inch); pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 3/3) moist; weak very thick platy structure; soft, very friable, nonsticky and nonplastic; 10 percent fine gravel and 20 percent medium and coarse gravel; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
A2—3 to 14 centimeters (1 to 5 inches); yellowish brown (10YR 5/4) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 7 percent fine gravel,

18 percent medium and coarse gravel, and 10 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk—14 to 37 centimeters (5 to 15 inches); pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 7 percent fine distinct irregular extremely weakly cemented very pale brown (10YR 8/2) masses of calcium carbonate with clear boundaries on undersides of rock fragments and 8 percent medium distinct irregular extremely weakly cemented very pale brown (10YR 8/2) masses of calcium carbonate with clear boundaries on undersides of rock fragments; 7 percent fine gravel, 28 percent medium and coarse gravel, and 15 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); very abrupt smooth boundary.

R—37 centimeters (15 inches); indurated limestone bedrock, fractured at intervals of 10 to 45 centimeters.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part from December to March and intermittently moist for 10 to 20 days from July to October following summer convection storms; aridic bordering on ustic moisture regime

Soil temperature: 12 to 15 degrees C

Depth to lithic contact: 36 to 50 centimeters

Control section

Clay content: 10 to 12 percent

Rock fragments: 35 to 60 percent, including 20 to 40 percent gravel and 10 to 20 percent cobbles

Calcium carbonate equivalent in the fine-earth fraction: 40 to 50 percent

A horizon

Clay content: 8 to 12 percent

Rock fragments: 15 to 50 percent, mainly gravel

Bk horizon

Clay content: 10 to 12 percent

Rock fragments: 35 to 65 percent, mainly gravel

Minehart Series

The Minehart series consists of very deep, well drained soils that formed in alluvium derived from volcanic and metamorphic rocks. These soils are on fan remnants (fig. 13). Slopes range from 2 to 8 percent. The mean annual precipitation is about 200 millimeters, and the mean annual air temperature is about 18 degrees C. The frost-free period is 180 to 240 days.

Taxonomic class: Fine-loamy, mixed, superactive, thermic Ustic Paleargids

Typical Pedon

Minehart gravelly fine sandy loam, 2 to 8 percent slopes (fig. 14); at an elevation of 1,397 meters; in San Bernardino County, California; about 18 kilometers south and 5 kilometers west of the Walking Box Ranch, 11 kilometers west of Searchlight, Nevada, on the west side of the Castle Mountains; about 4 kilometers north of Hart Mine site; about 420 meters south and 670 meters east of the northwest corner of sec. 1, T. 14 N., R. 17 E., San Bernardino Base and Meridian; USGS Hart Peak, California-Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 19 minutes, 38.1 seconds N. and long. 115 degrees, 6 minutes, 8.1 seconds W.; UTM 11S, 672491e, 3910987n; DTM: NAD83. When described, the soil was dry throughout.

Figure 13.—A typical area of Minehart soils in the Crescent Peak BLM Grazing Allotment.

Surface rock fragments: 15 percent fine gravel, 35 percent medium and coarse gravel, 3 percent cobbles, and 1 percent stones

A—0 to 7 centimeters (0 to 3 inches); brown (10YR 5/3) gravelly fine sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common very fine interstitial and few fine tubular pores; 5 percent fine gravel, 10 percent medium and coarse gravel, and 1 percent cobbles; slightly alkaline (pH 7.8); abrupt wavy boundary.

Bt—7 to 20 centimeters (3 to 8 inches); yellowish brown (10YR 5/4) gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate medium and coarse subangular blocky structure; moderately hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine tubular pores; 5 percent faint clay films on rock fragments; 15 percent fine gravel, 15 percent medium and coarse gravel, and 3 percent cobbles; slightly alkaline (pH 7.8); clear wavy boundary.

Btk1—20 to 33 centimeters (8 to 13 inches); brown (7.5YR 5/4) loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; moderately hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine tubular pores; 20 percent faint clay films on all faces of peds, surfaces along pores, and rock fragments and between sand grains; 20 percent prominent white (10YR 8/1) coats of calcium carbonate on undersides of rock fragments; 5 percent fine gravel and 10 percent medium and coarse gravel; slightly alkaline (pH 7.8); clear wavy boundary.

Btk2—33 to 52 centimeters (13 to 20 inches); brown (7.5YR 4/4) clay loam, brown (7.5YR 4/4) moist; moderate medium and coarse subangular blocky structure; hard, very friable, moderately sticky and moderately plastic; common very fine and few fine roots; common very fine and fine tubular pores; 40 percent distinct clay films on all faces of peds, surfaces along pores, and rock fragments; 20 percent prominent white (10YR 8/1) coats of calcium carbonate on undersides of

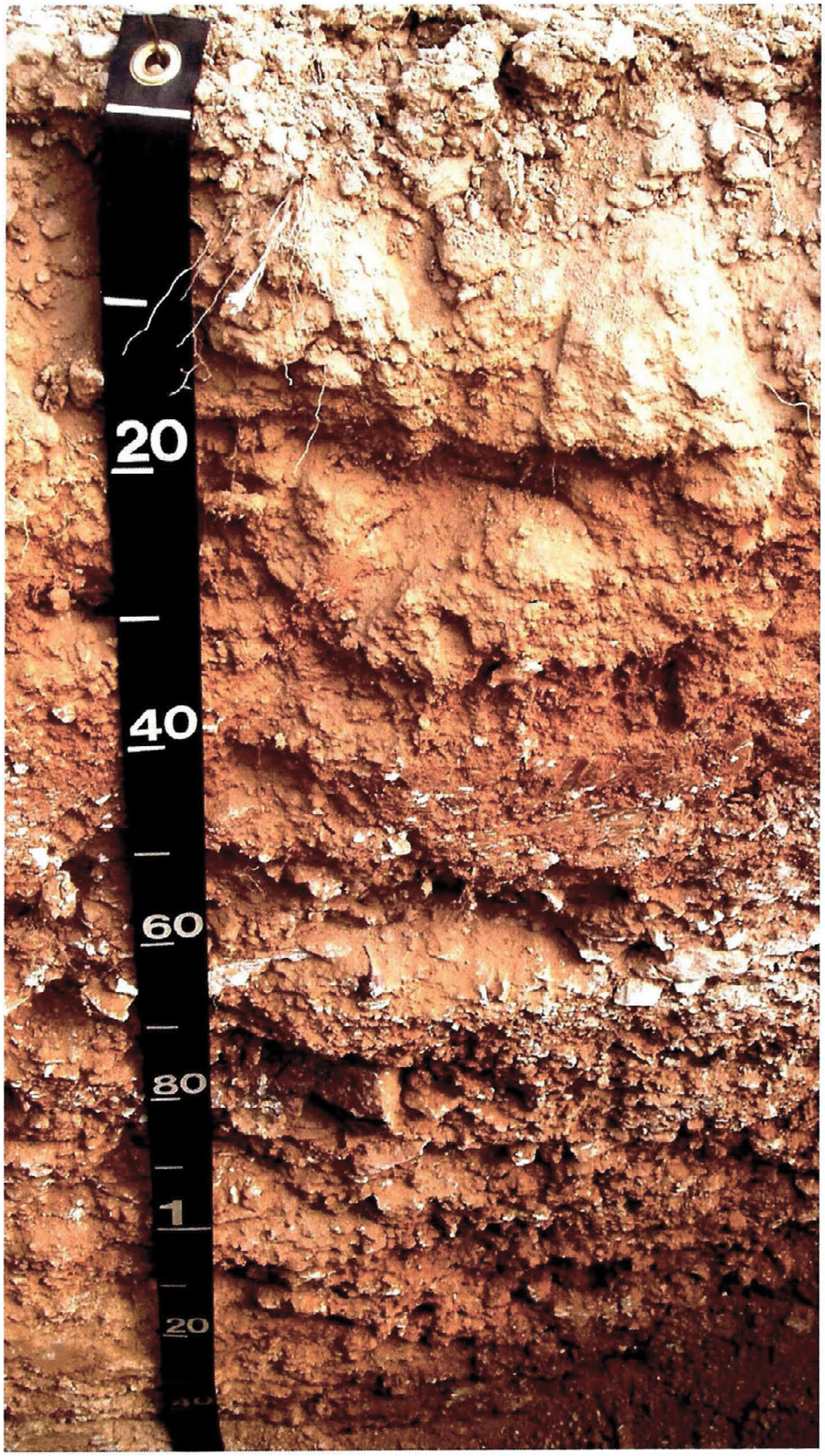

Figure 14.—A typical profile of Minehart soil in an area of Minehart gravelly fine sandy loam, 2 to 8 percent slopes.

rock fragments; 5 percent fine gravel and 10 percent medium and coarse gravel; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

2Btk3—52 to 96 centimeters (20 to 38 inches); brown (7.5YR 5/4) extremely gravelly coarse sandy loam, brown (7.5YR 4/4) moist; massive; very hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial and few fine tubular pores; 20 percent distinct clay films on rock fragments and between sand grains; 20 percent prominent white (10YR 8/1) coats of calcium carbonate on undersides of rock fragments; 15 percent fine gravel, 45 percent medium and coarse gravel, and 5 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

2Btk4—96 to 152 centimeters (38 to 60 inches); light brown (7.5YR 6/4) extremely gravelly coarse sandy loam, brown (7.5YR 4/4) moist; massive, slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common very fine and few fine tubular pores; 5 percent faint clay films on rock fragments; 20 percent prominent white (10YR 8/1) coats of calcium carbonate on undersides of rock fragments; 20 percent fine gravel, 40 percent medium and coarse gravel, and 5 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part from December to March and intermittently moist for 10 to 20 days from July to October following summer convection storms; aridic bordering on ustic moisture regime
Soil temperature: 15 to 18 degrees C
Depth to an argillic horizon: 5 to 10 centimeters

Control section
Clay content: Averages 18 to 27 percent
Rock fragments: Averages 5 to 20 percent, mainly gravel

A horizon
Value: 3 or 4 moist
Chroma: 3 or 4 dry
Rock fragments: 5 to 40 percent

Bt and Btk horizons
Hue: 10YR or 7.5YR
Value: 4 to 6 dry, 3 or 4 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Loam, clay loam, sandy clay loam, clay, or sandy loam
Clay content: Averages 18 to 27 percent, ranges from 12 to 45 percent
Structure: Moderate or strong, medium to very coarse
Consistence: Moderately hard to very hard, very friable or friable, slightly sticky or moderately sticky, slightly plastic or moderately plastic
Rock fragments: Averages 5 to 20 percent, ranges from 5 to 35 percent
Reaction: Slightly alkaline or moderately alkaline

2Btk horizon
Hue: 10YR or 7.5YR
Value: 5 or 6 dry, 4 or 5 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Coarse sandy loam or sandy loam
Clay content: 8 to 18 percent
Structure: Weak, medium or coarse, subangular blocky or massive
Consistence: Moderately hard to very hard, very friable or friable, slightly sticky or moderately sticky, slightly plastic or moderately plastic

Rock fragments: 35 to 70 percent
Reaction: Slightly alkaline or moderately alkaline

Newera Series

The Newera series consists of very shallow and shallow, somewhat excessively drained soils that formed in residuum and colluvium derived from rhyolite and altered granite. These soils are on hills and mountains. Slopes range from 4 to 50 percent. The mean annual precipitation is about 150 millimeters, and the mean annual air temperature is about 16 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic Lithic Haplargids

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Newera extremely gravelly sandy loam, 4 to 50 percent slopes; at an elevation of 1,118 meters; in Clark County, Nevada; about 1.9 kilometers southwest of Fourth of July Mountain and about 4 kilometers north of Tip Top Well; about 259 meters north and 15 meters east of the southwest corner of sec. 5, T. 29 S., R. 64 E., Mount Diablo Base and Meridian; lat. 35 degrees, 26 minutes, 45 seconds N. and long. 114 degrees, 52 minutes, 13 seconds W.; USGS Fourth of July Mountain, Nevada, 7.5-minute topographic quadrangle; UTM 11, 693304e, 3924565n; DTM: NAD83.

Surface rock fragments: 80 percent gravel

A—0 to 5 centimeters (0 to 2 inches); brown (10YR 5/3) extremely gravelly sandy loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial pores; 80 percent gravel; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bt—5 to 15 centimeters (2 to 6 inches); brown (10YR 5/3) very gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common very fine and fine tubular pores; common distinct clay films on faces of peds and common faint clay films lining pores; 50 percent gravel; moderately alkaline (pH 8.0); abrupt irregular boundary.

R—15 centimeters (6 inches); indurated, hard rhyolite; fractured in the upper 15 centimeters.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and intermittently moist for 10 to 20 days from July to October following summer convection storms; aridic bordering on ustic moisture regime
Soil temperature: 15 to 20 degrees C
Depth to bedrock: 10 to 36 centimeters (4 to 14 inches)
Effervescence: Noneffervescent to strongly effervescent

Control section
Clay content: Averages 18 to 35 percent
Texture of the fine-earth fraction: Sandy loam, loam, sandy clay loam, or clay loam
Rock fragments: Averages 35 to 70 percent

A horizon
Value: 5 or 6 dry, 3 or 4 moist

Chroma: 3 or 4
Clay content: 6 to 15 percent
Reaction: Slightly alkaline or moderately alkaline

Bt horizon
Value: 5 or 6 dry
Chroma: 3 or 4
Texture of the fine-earth fraction: Loam, sandy clay loam, or clay loam
Clay content: 18 to 35 percent
Reaction: Slightly alkaline or moderately alkaline

Owlshead Series

The Owlshead series consists of soils that are very shallow and shallow to a duripan, are well-drained, and formed in mixed alluvium. These soils are on fan remnants. Slopes range from 2 to 30 percent. The mean annual precipitation is about 125 millimeters, and the mean annual air temperature is about 15 degrees C. The frost-free period is 240 to 300 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic, shallow Cambidic Haplodurids

Typical Pedon

Owlshead loam, 2 to 30 percent slopes; at an elevation of 1,315 meters; in San Bernardino County, California; 41 meters east and 600 meters south of the northwest corner of sec. 5, T. 17 N., R. 13 E., San Bernardino Base and Meridian; USGS Pachalka Spring, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 35 minutes, 45.90 seconds N. and long. 115 degrees, 36 minutes, 15.70 seconds W.; UTM 11S, 626429e, 3940045n; DTM: NAD83.

Surface rock fragments: 30 percent fine gravel, 57 percent medium and coarse gravel, and 3 percent cobbles

A—0 to 5 centimeters (0 to 2 inches); pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate thick platy structure; very friable, slightly hard, slightly sticky and slightly plastic; common very fine roots throughout; common very fine and fine vesicular and common very fine, fine, and medium tubular pores; 5 percent fine gravel and 5 percent medium and coarse gravel; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bkq1—5 to 15 centimeters (2 to 6 inches); yellowish brown (10YR 5/4) gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots throughout; common fine and very fine tubular pores; 1 percent distinct very pale brown (10YR 7/3) silica on undersides of rock fragments; 8 percent medium prominent irregular weakly cemented white (10YR 8/1) masses of carbonate with clear boundaries on undersides of rock fragments; 10 percent fine gravel and 15 percent medium and coarse gravel; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bkq2—15 to 33 centimeters (6 to 13 inches); pale brown (10YR 6/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine and few medium roots throughout; 1 percent distinct very pale brown (10YR 7/3) silica on undersides of rock fragments and 10 percent distinct light gray (10YR 7/2) coats of carbonate on undersides of rock fragments; 10 percent medium prominent irregular moderately cemented white (10YR 8/1) durinodes with clear boundaries in the matrix; 10 percent fine gravel and 35 percent medium and

coarse gravel; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bkqm—33 to 104 centimeters (13 to 41 inches); white (10YR 8/1) weakly cemented duripan, light gray (10YR 7/2) moist; massive; extremely firm, rigid, moderately brittle; few fine and very fine roots in cracks, common fine and few medium roots at the top of the horizon; 10 percent fine gravel and 25 percent medium and coarse gravel; violently effervescent; clear wavy boundary.

Ckq—104 to 150 centimeters (41 to 59 inches); pale brown (10YR 6/3) very gravelly sand, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; 1 percent distinct very pale brown (10YR 7/3) silica on undersides of rock fragments and 10 percent distinct light gray (10YR 7/2) coats of carbonate on all surfaces of rock fragments; 10 percent fine gravel and 25 percent medium and coarse gravel; violently effervescent; moderately alkaline (pH 8.2).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative following convection storms; typic aridic moisture regime

Soil temperature: 17 to 22 degrees C

Control section

Rock fragments: Averages 35 to 40 percent

Depth to a duripan: 10 to 36 centimeters

A horizon

Value: 4 or 5 moist

Chroma: 2 to 4 dry, 3 or 4 moist

Texture of the fine-earth fraction: Sandy loam or loam

Clay content: 8 to 18 percent

Rock fragments: 10 to 25 percent, including 10 to 25 percent gravel and 0 to 2 percent cobbles

Reaction: Moderately alkaline or strongly alkaline

Bkq horizon

Hue: 10YR or 2.5Y

Value: 5 or 6 dry, 4 or 5 moist

Chroma: 3 or 4 dry or moist

Texture of the fine-earth fraction: Fine sandy loam or sandy loam

Clay content: 8 to 18 percent

Calcium carbonate equivalent in the fine-earth fraction: 5 to 10 percent in the upper part and 10 to 25 percent in the lower part

Rock fragments: 10 to 30 percent in the upper part and 40 to 70 percent in the lower part

Reaction: Moderately alkaline or strongly alkaline

Bkqm horizon

Value: 6 to 8 moist

Chroma: 1 or 2 dry, 2 or 3 moist

Cementation: Weakly cemented or moderately cemented

Ckq horizon

Value: 6 or 7 dry, 4 or 5 moist

Chroma: 2 or 3 dry or moist

Texture of the fine-earth fraction: Sand, coarse sand, or loamy sand

Clay content: 2 to 6 percent

Rock fragments: 35 to 80 percent, including 25 to 60 percent gravel, 0 to 25 percent cobbles, and 0 to 5 percent stones

Reaction: Slightly alkaline or moderately alkaline
Calcium carbonate equivalent in the fine-earth fraction: 0 to 20 percent
Durinodes: 0 to 10 percent

Peskah Series

The Peskah series consists of soils that are deep to a duripan, are well drained, and formed in alluvium derived from volcanic rocks. These soils are on fan remnants. Slopes range from 2 to 8 percent. The mean annual precipitation is about 150 millimeters, and the mean annual air temperature is about 16 degrees C. The frost-free period is 240 to 300 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic Duric Petroargids

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Peskah extremely gravelly fine sandy loam, 4 to 8 percent slopes; at an elevation of 1,003 meters; in Clark County, Nevada; about 5.6 kilometers north of VEYK-C mine and about 4.5 kilometers along the far western steel power-transmission-line road in southern Eldorado Valley; about 366 meters south and 61 meters west of the northeast corner of sec. 18, T. 27 S., R. 63 E., Mount Diablo Base and Meridian; lat. 35 degrees, 35 minutes, 53 seconds N. and long. 114 degrees, 58 minutes, 23 seconds W.; USGS Nelson SW, Nevada, 7.5-minute quadrangle; UTM 11S, 683619e, 3941259n; DTM: NAD83.

Surface rock fragments: 70 percent gravel, 5 percent cobbles, and 3 percent stones

A—0 to 3 centimeters (0 to 1 inch); pale brown (10YR 6/3) extremely gravelly fine sandy loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine vesicular pores; 70 percent gravel, 5 percent cobbles, and 3 percent stones; moderately alkaline (pH 8.2); abrupt smooth boundary.

BA—3 to 10 centimeters (1 to 4 inches); very pale brown (10YR 7/3) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; strong thick platy structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and common fine vesicular pores; 15 percent gravel; moderately alkaline (pH 8.4); abrupt smooth boundary.

Btk1—10 to 20 centimeters (4 to 8 inches); strong brown (7.5YR 5/6) gravelly sandy clay loam, strong brown (7.5YR 4/6) moist; strong fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and common fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; few distinct coats of calcium carbonate on undersides of rock fragments; 25 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.2); abrupt smooth boundary.

Btk2—20 to 38 centimeters (8 to 15 inches); brown (7.5YR 5/4) very gravelly sandy clay loam, brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and common fine roots; common very fine and fine tubular pores; common faint clay films on faces of peds and few faint clay films lining pores; many distinct irregular filaments of calcium carbonate throughout; common distinct filaments of calcium carbonate on tops and sides of rock fragments; few distinct coats of calcium carbonate on undersides of rock fragments; 40 percent gravel; strongly effervescent (6 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.2); abrupt smooth boundary.

2Bk—38 to 66 centimeters (15 to 26 inches); light brown (7.5YR 6/3) extremely gravelly sandy loam, brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine interstitial pores; common distinct irregular threads of calcium carbonate; common distinct filaments of calcium carbonate on tops and sides of rock fragments; few distinct coats of calcium carbonate on undersides of rock fragments; 60 percent gravel, 10 percent cobbles, and 1 percent stones; violently effervescent (6 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.4); abrupt smooth boundary.

3Bk—66 to 109 centimeters (26 to 43 inches); brown (10YR 5/3) extremely gravelly coarse sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; 70 percent gravel; few very thin filaments of calcium carbonate on undersides of coarse fragments; moderately alkaline (pH 8.2); abrupt smooth boundary.

4Bqkm—109 to 152 centimeters (43 to 60 inches); very pale brown (10YR 8/2) moderately cemented duripan, very pale brown (10YR 7/3) moist; massive; extremely hard, extremely firm; violently effervescent.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative from July to October following convection storms; typic aridic moisture regime
Soil temperature: 15 to 18 degrees C
Depth to the base of the argillic horizon: 33 to 89 centimeters (13 to 35 inches)
Depth to secondary calcium carbonate: 10 to 25 centimeters (4 to 10 inches)
Depth to a duripan: 102 to 152 centimeters (40 to 60 inches)

Control section
Clay content: 18 to 35 percent
Rock fragments: Averages 35 to 50 percent

A horizon
Value: 5 or 6 dry, 3 or 4 moist
Chroma: 3 or 4

BA horizon
Hue: 7.5YR or 10YR
Value: 5 to 7 dry, 4 or 5 moist
Chroma: 3 or 4
Texture of the fine-earth fraction: Sandy loam or fine sandy loam
Clay content: 8 to 18 percent
Rock fragments: 15 to 50 percent
Structure: Platy or subangular blocky

Btk1 horizon
Value: 3 or 4 moist
Chroma: 4 to 6
Texture of the fine-earth fraction: Sandy clay loam or sandy loam
Clay content: 18 to 35 percent
Rock fragments: 20 to 35 percent
Calcium carbonate equivalent in the fine-earth fraction: 0 to 5 percent

Btk2 horizon
Value: 3 or 4 moist
Chroma: 4 to 6
Texture of the fine-earth fraction: Sandy clay loam or sandy loam
Clay content: 18 to 35 percent

Rock fragments: 35 to 60 percent
Calcium carbonate equivalent in the fine-earth fraction: 0 to 10 percent

2Bk horizon
Hue: 7.5YR or 10YR
Value: 5 or 6 dry, 4 or 5 moist
Chroma: 3 or 4
Texture of the fine-earth fraction: Sandy loam or loamy sand
Clay content: 5 to 15 percent
Rock fragments: 65 to 85 percent
Calcium carbonate equivalent in the fine-earth fraction: 0 to 10 percent

4Bqkm horizon
Consistence: Extremely hard or rigid, extremely firm or slightly rigid
Cementation: Moderately cemented or strongly cemented

Petronodic Haplocalcids

Petronodic Haplocalcids are very deep, well drained soils that formed in lacustrine deposits from mixed sources. These soils are on lake plains and alluvial flats. Slopes range from 0 to 2 percent. The mean annual precipitation is about 125 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 280 to 320 days.

Taxonomic class: Fine-silty, mixed, superactive, thermic Petronodic Haplocalcids

Representative Pedon

Petronodic Haplocalcids in an area of Petronodic Haplocalcids-Calcic Petrocalcids, 0 to 2 percent slopes; at an elevation of 781 meters; in San Bernardino County, California; about 2.2 kilometers from the middle of Mesquite Lake dry lake and 2 kilometers east of Old Traction Road; 47 meters east and 70 meters south of the northwest corner of sec. 8, T. 18 N., R. 13 E., San Bernardino Base and Meridian; USGS Mesquite Lake, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 42 minutes, 51.10 seconds N. and long. 115 degrees, 35 minutes, 20.50 seconds W.; UTM 11S, 627634e, 3953161n; DTM: NAD83. When described, the soil was dry throughout.

A—0 to 1 centimeter (0 to 0.5 inch); light gray (10YR 7/2) silt loam, light brownish gray (10YR 6/2) moist; strong thin platy structure; slightly hard, very friable, moderately sticky and moderately plastic; common fine vesicular, common very fine vesicular, and common very fine tubular pores; 1 percent fine gravel; violent effervescence; strongly alkaline (pH 8.6); abrupt smooth boundary.

Bky—1 to 11 centimeters (0 to 4 inches); pale brown (10YR 6/3) silt loam, pale brown (10YR 6/3) moist; weak thin platy structure parting to weak medium subangular blocky; soft, very friable, nonsticky and nonplastic; 20 percent fine distinct irregular white (10YR 8/1) masses of carbonate with clear boundaries in the matrix; 1 percent fine distinct irregular masses of gypsum with clear boundaries in the matrix; 1 percent fine gravel; violent effervescence; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bknz1—11 to 58 centimeters (4 to 23 inches); 50 percent white (10YR 8/1) and 50 percent light brownish gray (10YR 6/2) silty clay loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; moderately hard, friable, very sticky and very plastic; 40 percent medium distinct irregular moderately cemented very pale brown (10YR 8/2) nodules of carbonate with clear boundaries in the matrix; violent effervescence; strongly alkaline (pH 8.6); clear smooth boundary.

Bknz2—58 to 125 centimeters (23 to 49 inches); 40 percent light brownish gray (10YR 6/2) and 60 percent white (10YR 8/1) silty clay loam, brown (10YR 5/3) moist; massive; moderately hard, friable, very sticky and very plastic; 10 percent fine prominent irregular very pale brown (10YR 8/2) masses of carbonate with clear boundaries in the matrix; 7 percent medium distinct irregular extremely weakly cemented very pale brown (10YR 8/2) masses of carbonate with clear boundaries in the matrix; 10 percent medium distinct irregular strongly cemented very pale brown (10YR 8/2) carbonate nodules with clear boundaries in the matrix; violent effervescence; strongly alkaline (pH 8.6).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some parts for short periods during winter and early spring and for 10 to 20 days cumulative following summer convection storms; typic aridic moisture regime
Soil temperature: 19 to 22 degrees C
Depth to a calcic horizon: 10 to 50 centimeters

Control section
Clay content: 18 to 28 percent
Calcium carbonate equivalent in the fine-earth fraction: Averages 10 to 25 percent

A horizon
Value: 6 or 7 dry, 5 or 6 moist
Chroma: 2 or 3 dry or moist
Texture of the fine-earth fraction: Fine sandy loam or silt loam
Clay content: 7 to 14 percent
Rock fragments: 0 to 5 percent gravel
Sodium adsorption ratio: 0 to 8
Electrical conductivity: 0 to 5 dS/m
Reaction: Moderately alkaline or strongly alkaline

Bk or Bky horizon
Value: 5 or 6 moist
Texture of the fine-earth fraction: Silt loam or fine sandy loam
Clay content: 6 to 16 percent
Rock fragments: 1 to 2 percent gravel
Gypsum: 0 to 1 percent
Calcium carbonate equivalent in the fine-earth fraction: 15 to 30 percent
Sodium adsorption ratio: 5 to 13
Electrical conductivity: 4 to 8 dS/m

Bknz1 horizon
Value: 6 to 8 dry, 5 to 7 moist
Chroma: 1 or 2 dry
Texture of the fine-earth fraction: Silty clay loam, fine sandy loam, or loamy fine sand
Clay content: 6 to 28 percent
Rock fragments: 0 to 35 percent, mainly gravel
Calcium carbonate equivalent in the fine-earth fraction: 15 to 30 percent
Sodium adsorption ratio: 13 to 100
Electrical conductivity: 4 to 16 dS/m
Reaction: Moderately alkaline or strongly alkaline
Other features: In some pedons, 20 to 40 percent moderately cemented or strongly cemented petronodes that range from less than 2 millimeters to 10 millimeters in diameter

Bknz2 horizon
Value: 6 to 8 dry, 5 or 6 moist

Chroma: 1 or 2 dry
Texture of the fine-earth fraction: Silty clay loam or silt loam
Clay content: 20 to 28 percent
Calcium carbonate equivalent: 5 to 10 percent
Sodium adsorption ratio: 13 to 100
Electrical conductivity: 4 to 16 dS/m
Other features: In some pedons, up to 20 percent strongly cemented petronodes that range from less than 2 millimeters to 5 millimeters in diameter

Pipeflat Series

The Pipeflat series consists of very deep, somewhat excessively drained soils that formed in eolian sand over alluvium derived from mixed sources. These soils are on sand sheets on lower fan aprons over fan remnants. Slopes range from 2 to 4 percent. The mean annual precipitation is about 125 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 240 to 300 days.

Taxonomic class: Loamy, mixed, superactive, thermic Arenic Haplargids

Typical Pedon

Pipeflat loamy fine sand in an area of Hypoint-Pipeflat association, 2 to 8 percent slopes; at an elevation of 909 meters; in San Bernardino County, California; 100 meters west and 585 meters north of the southeast corner of sec. 19, T. 16 N., R. 16 E., San Bernardino Base and Meridian; lat. 35 degrees, 29 minutes, 41.50 seconds N. and long. 115 degrees, 17 minutes, 28.10 seconds W.; UTM 11S, 654999e, 3929265n; DTM: NAD83.

Surface rock fragments: 5 percent fine gravel and 15 percent medium and coarse gravel

A1—0 to 6 centimeters (0 to 2 inches); light yellowish brown (10YR 6/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; strong very thick platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 3 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

A2—6 to 26 centimeters (2 to 10 inches); light yellowish brown (10YR 6/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; massive parting to weak thick platy structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; common very fine and fine interstitial pores; 3 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Ckq—26 to 64 centimeters (10 to 25 inches); reddish yellow (7.5YR 6/6) gravelly loamy sand, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to coarse roots; common very fine interstitial pores; common faint coats of silica on rock fragments and few faint coats of carbonate on rock fragments; 3 percent fine gravel, 12 percent medium and coarse gravel, and 7 percent cobbles; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

2Btkq—64 to 90 centimeters (25 to 35 inches); strong brown (7.5YR 5/6) gravelly sandy loam, strong brown (7.5YR 4/6) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; few faint clay films on all faces of peds; few distinct carbonate coats on rock fragments; 3 percent fine prominent threadlike white (10YR 8/1) masses of calcium carbonate with clear boundaries in the matrix; 2 percent medium distinct irregular very pale brown (10YR 8/2) masses of calcium carbonate with clear boundaries in the matrix; 5 percent fine

gravel and 10 percent medium and coarse gravel; slightly effervescent; moderately alkaline (pH 8.2); clear irregular boundary.

2Bkq1—90 to 109 centimeters (35 to 43 inches); reddish yellow (7.5YR 6/6) very gravelly loamy sand, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and medium roots; common fine interstitial pores; few distinct white (10YR 8/1) coats of calcium carbonate on rock fragments; 10 percent fine gravel and 40 percent medium and coarse gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

2Bkq2—109 to 126 centimeters (43 to 50 inches); very pale brown (10YR 7/3) very gravelly loamy sand, brown (10YR 5/3) moist; massive; moderately hard, very friable, nonsticky and nonplastic; 5 percent very coarse distinct irregular white (10YR 8/1) durinodes with clear boundaries in the matrix; few distinct white (10YR 8/1) coats of calcium carbonate on rock fragments; 8 percent fine gravel and 37 percent medium and coarse gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

2Bkq3—126 to 155 centimeters (50 to 62 inches); light yellowish brown (10YR 6/4) very gravelly coarse sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; common distinct light yellowish brown (10YR 6/4) silica on undersides of rock fragments; 30 percent fine gravel and 10 percent medium and coarse gravel; strongly effervescent; moderately alkaline (pH 8.2).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative following summer convection storms; typic aridic moisture regime
Soil temperature: 17 to 22 degrees C
Depth to an argillic horizon: 50 to 75 centimeters

Control section
Clay content: 8 to 15 percent
Rock fragments: 10 to 20 percent

A horizon
Rock fragments: 1 to 10 percent

Ck or Ckq horizon
Hue: 10YR or 7.5YR
Clay content: 2 to 6 percent
Rock fragments: 5 to 20 percent, mainly gravel
Effervescence: Slightly effervescent to strongly effervescent
Calcium carbonate equivalent in the fine-earth fraction: 0 to 5 percent

2Btkq horizon
Hue: 10YR or 7.5YR
Clay content: 8 to 15 percent
Effervescence: Slightly effervescent to strongly effervescent
Calcium carbonate equivalent in the fine-earth fraction: 0 to 5 percent

2Bkq horizon
Hue: 10YR or 7.5YR
Value: 6 or 7 dry, 3 to 5 moist
Chroma: 3 to 6 dry, 3 or 4 moist
Clay content: 2 to 6 percent
Texture of the fine-earth fraction: Coarse sand or loamy sand
Rock fragments: 15 to 70 percent, mainly gravel
Calcium carbonate equivalent in the fine-earth fraction: 5 to 10 percent

Popups Series

The Popups series consists of soils that are moderately deep to a duripan, are well drained, and formed in alluvium derived from metamorphic rock sources. These soils are on fan remnants. Slopes range from 4 to 30 percent. The mean annual precipitation is about 140 millimeters, and the mean annual air temperature is about 19 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Coarse-loamy, mixed, superactive, thermic Argidic Argidurids

Typical Pedon

Popups sandy loam, 4 to 30 percent slopes; at an elevation of 1,123 meters; in San Bernardino County, California; about 9 kilometers west of Interstate 15 and Yates Well Road exit; 475 meters north and 775 meters east of the southwest corner of sec. 17, T. 16 N., R. 14 E., San Bernardino Base and Meridian; lat. 35 degrees, 30 minutes, 32.10 seconds N. and long. 115 degrees, 29 minutes, 42.00 seconds W.; UTM 11S, 636483e, 3930524n; DTM: NAD83.

Surface rock fragments: 15 percent fine gravel, 55 percent medium and coarse gravel, and 5 percent cobbles

A—0 to 3 centimeters (0 to 1 inch); brown (10YR 4/3) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate very thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine irregular and common very fine tubular pores; 5 percent fine gravel and 5 percent medium and coarse gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Bt—3 to 11 centimeters (1 to 4 inches); brown (10YR 4/3) sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; few very fine irregular pores; few faint clay films on all faces of peds; 5 percent fine gravel and 5 percent medium and coarse gravel; slightly effervescent; moderately alkaline (pH 8.1); clear wavy boundary.

Btk1—11 to 26 centimeters (4 to 10 inches); brown (7.5YR 4/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and few fine and medium roots; common very fine irregular pores; few distinct clay films on all faces of peds and few distinct clay films on rock fragments; 1 percent very fine distinct threadlike white (10YR 8/1) masses of calcium carbonate with clear boundaries on faces of peds; 20 percent very fine prominent irregular extremely weakly cemented white (10YR 8/1) masses of calcium carbonate with clear boundaries on undersides of rock fragments; 5 percent very fine prominent irregular extremely weakly cemented masses of silica with clear boundaries on undersides of rock fragments; 10 percent fine gravel and 10 percent medium and coarse gravel; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Btk2—26 to 99 centimeters (10 to 39.5 inches); yellowish brown (10YR 5/6) gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; moderately hard, friable, slightly sticky and slightly plastic; few fine, few medium, and few very fine roots; common very fine and few fine irregular pores; few distinct clay films on all faces of peds and few distinct clay films on rock fragments; 1 percent very fine distinct threadlike white (10YR 8/1) masses of calcium carbonate with clear boundaries on faces of peds; 5 percent very fine prominent irregular extremely weakly cemented masses of silica with clear boundaries on undersides of rock fragments; 20 percent very fine prominent irregular extremely weakly cemented white (10YR 8/1) masses of

calcium carbonate with clear boundaries on undersides of rock fragments; 30 percent medium and coarse gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bkqm—99 to 155 centimeters (39.5 to 62 inches); white (10YR 8/1) weakly cemented duripan, very pale brown (10YR 8/2) moist; massive; hard, very firm, brittle; common very fine irregular and common very fine tubular pores; violently effervescent.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative following summer convection storms; typic aridic moisture regime

Soil temperature: 17 to 22 degrees C

Control section

Clay content: 10 to 18 percent

Depth to a duripan: 50 to 100 centimeters

Rock fragments: Averages 15 to 35 percent, mainly gravel

A horizon

Value: 4 to 7 dry, 3 to 6 moist

Chroma: 3 or 4 dry, 3 to 6 moist

Texture of the fine-earth fraction: Sandy loam, fine sandy loam, or loam

Clay content: 8 to 12 percent

Rock fragments: 10 to 35 percent, mainly gravel

Effervescence: Noneffervescent to strongly effervescent

Reaction: Slightly alkaline or moderately alkaline

Bt and Btk horizons

Hue: 7.5YR or 10YR

Value: 4 to 7 dry, 4 to 6 moist

Chroma: 3 to 6 dry, 3 to 6 moist

Texture of the fine-earth fraction: Coarse sandy loam, sandy loam, or sandy clay loam

Clay content: Averages 10 to 18 percent, ranges from 8 to 25 percent

Rock fragments: 15 to 40 percent, including 15 to 35 percent gravel, 0 to 3 cobbles, and 0 to 5 stones

Effervescence: Noneffervescent to violently effervescent

Reaction: Slightly alkaline or moderately alkaline

Calcium carbonate equivalent in the fine-earth fraction: 1 to 5 percent

Bkqm horizon

Hue: 10YR or 2.5Y

Value: 7 or 8 dry, 6 to 8 moist

Chroma: 1 to 3 dry, 2 to 4 moist

Cementation: Weakly cemented or moderately cemented

Straycow Series

The Straycow series consists of very shallow and shallow, well drained soils that formed in residuum and colluvium derived from metamorphic rock. These soils are on hills. Slopes range from 8 to 50 percent. The mean annual precipitation is about 150 millimeters, and the mean annual air temperature is about 16 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic, shallow Typic Haplargids

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Straycow extremely gravelly sandy loam in an area of Straycow-Highland association, 15 to 50 percent slopes; at an elevation of 1,100 to 1,500 meters; in Clark County, Nevada; about 2 miles east of Hart Peak on the east side of the Castle Mountains and 1/2 mile north of Stray Cow Well; about 1,125 feet east and 1,040 feet south of the northwest corner of sec. 15, T. 30 S., R. 62 E.; USGS Hart Peak, Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 20 minutes, 21 seconds N. and long. 115 degrees, 2 minutes, 39 seconds W.; UTM 11s, 677744e, 3912411n; DTM: NAD83.

Surface rock fragments: 65 percent gravel and 5 percent cobbles

A—0 to 5 centimeters (0 to 2 inches); yellowish brown (10YR 5/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and few fine interstitial and tubular pores; 65 percent gravel and 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

Bt—5 to 18 centimeters (2 to 7 inches); reddish yellow (5YR 6/6) very gravelly clay loam, yellowish red (5YR 4/6) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and few fine roots; many very fine and few fine tubular pores; many prominent clay films on faces of peds and lining pores and many colloidal stains coating rock fragments; 50 percent gravel; neutral (pH 7.0); abrupt wavy boundary.

Cr—18 to 51 centimeters (7 to 20 inches); weathered bedrock; roots and soil in fractures.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part during winter and spring and intermittently moist in the upper part following summer convection storms; typic aridic moisture regime
Soil temperature: 15 to 18 degrees C
Depth to an argillic horizon: 3 to 8 centimeters
Depth to paralithic contact: 13 to 51 centimeters

Control section
Clay content: 12 to 24 percent above the argillic horizon and 27 to 35 percent in the argillic horizon
Rock fragments: Averages 35 to 60 percent, mainly gravel
Reaction: Neutral or slightly alkaline
Other features: Noncalcareous throughout

A horizon
Hue: 10YR or 7.5YR
Value: 5 or 6 dry

Bt horizon
Chroma: 4 to 6
Texture: Sandy clay loam or clay loam
Consistence: Slightly hard or hard

Tonopah Series

The Tonopah series consists of very deep, excessively drained soils that formed in mixed alluvium. These soils are on inset fans and fan aprons. Slopes range from 2 to 15

percent. The mean annual precipitation is about 150 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 240 to 300 days.

Taxonomic class: Sandy-skeletal, mixed, thermic Typic Haplocalcids

Typical Pedon

Tonopah fine sandy loam, 2 to 8 percent slopes, rarely flooded; at an elevation of 1,213 meters; in San Bernardino County, CA; 210 meters west and 375 meters south of the northeast corner of sec. 1, T. 17 N., R. 12.5 E., San Bernardino Base and Meridian; lat. 35 degrees, 35 minutes, 54 seconds N. and long. 115 degrees, 37 minutes, 43 seconds W.; USGS Pachalka Spring, California, 7.5-minute topographic quadrangle; UTM 11S, 624236e, 3940250n; DTM: NAD83.

Surface rock fragments: 79 percent gravel and 1 percent cobbles

A—0 to 4 centimeters (0 to 2 inches); pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, nonsticky and nonplastic; few fine and common very fine roots throughout; common very fine vesicular and few very fine tubular pores; 5 percent large gravel and 5 percent fine gravel; violently effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—4 to 45 centimeters (2 to 18 inches); light yellowish brown (10YR 6/4) gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; 59 percent sand; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine, few medium, and common very fine roots throughout; common very fine tubular and common very fine interstitial pores; 5 percent prominent white (10YR 8/1) coats of carbonate on undersides of rock fragments; 8 percent large gravel and 7 percent fine gravel; violently effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bkq—45 to 68 centimeters (18 to 27 inches); pale brown (10YR 6/3) very gravelly loamy fine sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots throughout; 35 percent prominent carbonate coats on rock fragments; 10 percent fine prominent irregular very strongly cemented light gray (10YR 7/2) masses of silica with clear boundaries on undersides of rock fragments; 12 percent medium prominent irregular very weakly cemented very pale brown (10YR 8/2) durinodes with clear boundaries in the matrix; 3 percent coarse prominent irregular very weakly cemented very pale brown (10YR 8/2) durinodes with clear boundaries in the matrix; 1 percent cobbles, 35 percent large gravel, and 5 percent fine gravel; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bq—68 to 100 centimeters (27 to 39 inches); pale brown (10YR 6/3) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; 10 percent fine prominent irregular very strongly cemented light gray (10YR 7/2) masses of silica with clear boundaries on undersides of rock fragments; 2 percent cobbles, 25 percent large gravel, and 25 percent fine gravel; violently effervescent; moderately alkaline (pH 8.4).

Range in Characteristics

Soil moisture control section: Usually dry, but moist in some part for short periods in winter and early spring and intermittently moist in the upper part for 10 to 20 days following summer convection storms; typic aridic moisture regime

Soil temperature: 15 to 20 degrees C

Depth to a calcic horizon: 10 to 20 centimeters

Reaction: Slightly alkaline or moderately alkaline

Other features: In some pedons, no silica coatings or durinodes in the lower horizons of the substratum

Control section
Clay content: 2 to 12 percent
Calcium carbonate equivalent in the fine-earth fraction: 10 to 20 percent in the upper part and 5 to 15 in the lower part
Rock fragments: Averages 45 to 65 percent, mainly gravel

A horizon
Value: 5 or 6 dry, 4 or 5 moist
Chroma: 3 or 4 dry or moist
Clay content: 8 to 15 percent
Rock fragments: 10 to 20 percent

Bk horizon
Value: 4 or 5 moist
Chroma: 3 or 4 moist
Texture of the fine-earth fraction: Loamy fine sand, fine sandy loam, or sandy loam
Clay content: 6 to 15 percent
Rock fragments: 15 to 45 percent, mainly gravel
Calcium carbonate equivalent in the fine-earth fraction: 10 to 20 percent

Bkq and Bq horizons
Value: 4 or 5 moist
Chroma: 3 or 4 moist
Texture of the fine-earth fraction: Loamy fine sand, loamy sand, or sand
Clay content: 2 to 10 percent
Rock fragments: 35 to 70 percent, mainly gravel
Calcium carbonate equivalent in the fine-earth fraction: 5 to 40 percent

Typic Calcigypsids

Typic Calcigypsids are very deep, well drained soils that formed from mixed lacustrine deposits derived from limestone and dolomite. These soils are on lake terraces. Slopes range from 0 to 2 percent. The mean annual precipitation is about 140 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 280 to 320 days.

Taxonomic class: Coarse-loamy, gypsic, thermic Typic Calcigypsids

Typical Pedon

Typic Calcigypsids in an area of Typic Calcigypsids-Typic Haplosalids association, 0 to 2 percent slopes; at an elevation of 772 meters; in San Bernardino County, California; 500 meters east of Mesquite Pass Road; 220 meters east and 838 meters north of the southwest corner of sec. 4, T. 18 N., R. 13 E., San Bernardino Base and Meridian; USGS Mesquite Lake, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 42 minutes, 51.10 seconds N. and long. 115 degrees, 35 minutes, 20.50 seconds W.; UTM 11S, 627634e, 3953161n; DTM: NAD83.

Ay—0 to 8 centimeters (0 to 3 inches); very pale brown (10YR 7/3) gypsiferous material, yellowish brown (10YR 5/4) moist; moderate very thick platy structure; soft, firm, nonsticky and nonplastic; common very fine interstitial pores; apparent texture of the fine-earth fraction is sandy loam; 20 percent fine, 15 percent medium, and 15 percent coarse prominent strongly cemented concretions of gypsum crystals that have sharp boundaries in the matrix and do not slake in water; strongly effervescent (5 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.4); abrupt wavy boundary.

ABy—8 to 18 centimeters (3 to 7 inches); very pale brown (10YR 7/3) gypsiferous material, light yellowish brown (10YR 6/4) moist; strong coarse subangular blocky structure; hard, firm, slightly sticky and nonplastic; common very fine interstitial pores; apparent texture of the fine-earth fraction is sandy loam; 20 percent fine, 30 percent medium, and 40 percent coarse prominent strongly cemented concretions of gypsum crystals that have sharp boundaries in the matrix and do not slake in water; strongly effervescent (9 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.2); gradual wavy boundary.

Bky—18 to 70 centimeters (7 to 28 inches); light gray (10YR 7/2) gypsiferous material, pale brown (10YR 6/3) moist; strong very coarse subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; apparent texture of the fine-earth fraction is sandy loam; 10 percent fine, 7 percent medium, and 60 percent coarse prominent strongly cemented concretions of gypsum crystals that have sharp boundaries in the matrix and do not slake in water; strongly effervescent (20 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.0); gradual wavy boundary.

Cy1—70 to 160 centimeters (28 to 64 inches); light gray (10YR 7/2) gypsiferous material, very pale brown (10YR 7/3) moist; massive; moderately hard, friable, slightly sticky and slightly plastic; apparent texture of the fine-earth fraction is sandy loam; 20 percent fine, 30 percent medium, and 10 percent coarse prominent strongly cemented concretions of gypsum crystals that have sharp boundaries in the matrix and do not slake in water; violently effervescent (8 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.2); clear wavy boundary.

Cy2—160 to 180 centimeters (64 to 72 inches); light gray (10YR 7/2) gypsiferous material, very pale brown (10YR 7/3) moist; massive; moderately hard, friable, moderately sticky and moderately plastic; apparent texture of the fine-earth fraction is sandy loam; 40 percent fine and 30 percent medium prominent strongly cemented gypsum crystals that have sharp boundaries in the matrix and do not slake in water; violently effervescent (8 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.2).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part during winter and spring and for 10 to 20 days cumulative following summer convection storms; typic aridic moisture regime

Soil temperature: 19 to 22 degrees C

Depth to a gypsic horizon: 0 to 2 centimeters

Depth to a calcic horizon: 4 to 18 centimeters

Control section

Fragments larger than 2 millimeters: 15 to 70 percent strongly cemented concretions of gypsum crystals that do not slake in water

Clay content: 12 to 18 percent

Reaction: Slightly alkaline or moderately alkaline

Ay and ABy horizons

Value: 5 or 6 moist

Apparent texture of the fine-earth fraction: Sandy loam or loam

Clay content: 5 to 10 percent

Calcium carbonate equivalent in the fine-earth fraction: 5 to 10 percent

Gypsum: 25 to 65 percent

Bky horizon

Value: 6 or 7 dry, 5 or 6 moist

Chroma: 2 to 4 dry, 3 or 4 moist

Apparent texture of the fine-earth fraction: Sandy loam or loam
Clay content: 12 to 18 percent
Calcium carbonate equivalent in the fine-earth fraction: 10 to 20 percent
Gypsum: 25 to 95 percent
Electrical conductivity: 2 to 4 dS/m
Reaction: Slightly alkaline or moderately alkaline

Cy horizon
Value: 6 or 7 dry, 6 or 7 moist
Chroma: 2 to 4 dry, 3 or 4 moist
Apparent texture of the fine-earth fraction: Sandy loam or loam
Clay content: 12 to 18 percent
Calcium carbonate equivalent in the fine-earth fraction: 5 to 10 percent
Gypsum: 35 to 80 percent
Electrical conductivity: 4 to 8 dS/m

Typic Haplosalids

Typic Haplosalids are very deep, well drained soils that formed in lacustrine deposits derived from limestone and dolomite. These soils are on bolson floors and surrounding lake plains. Slopes range from 0 to 2 percent. The mean annual precipitation is about 140 millimeters, and the mean annual air temperature is about 18.5 degrees C. The frost-free period is 280 to 320 days.

Representative Pedon

Typic Haplosalids in an area of Typic Calcigypsids-Typic Haplosalids association, 0 to 2 percent slopes; at an elevation of 770 meters; in San Bernardino County, California; 675 meters east and 515 meters north of the southwest corner of sec. 5, T. 18 N., R. 13 E., San Bernardino Base and Meridian; USGS Mesquite Lake, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 42 minutes, 40.90 seconds N. and long. 115 degrees, 36 minutes, 6.00 seconds W.; UTM 11S, 626493e, 3932837n; DTM: NAD83. The following pedon is only representative for soils on or around Mesquite Lake. The range in characteristics is reflective of all soils on bolson floors.

Anyz—0 to 2 centimeters (0 to 1 inch); pale brown (10YR 6/3) gypsiferous silt loam, dark yellowish brown (10YR 4/4) moist; weak medium platy structure; moderately hard, friable, slightly sticky and moderately plastic; common fine irregular pores; 10 percent fine distinct gypsum crystals in the matrix; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Cnyz1—2 to 10 centimeters (1 to 4 inches); very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, firm, slightly sticky and moderately plastic; common very fine interstitial pores; 5 percent fine distinct gypsum crystals in the matrix; very slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Cnyz2—10 to 21 centimeters (4 to 8 inches); very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and moderately plastic; 1 percent fine distinct gypsum crystals in the matrix; moderately alkaline (pH 8.0); clear wavy boundary.

Cnz1—21 to 70 centimeters (8 to 28 inches); light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and moderately plastic; moderately alkaline (pH 8.0).

Cnz2—70 to 130 centimeters (28 to 52 inches); pale brown (10YR 6/3) silty clay loam, yellowish brown (10YR 5/4) moist; massive; moderately hard, firm, slightly sticky and moderately plastic; moderately alkaline (pH 8.2).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part during winter and spring and for 10 to 20 days cumulative following summer convection storms; typic aridic moisture regime
Soil temperature: 19 to 22 degrees C
Depth to a salic horizon: 0 to 20 centimeters

Control section
Clay content: 20 to 35 percent
Sodium adsorption ratio: 40 to 200
Electrical conductivity: 40 to 180 dS/m

Anyz or A horizon
Hue: 10YR or 7.5YR
Value: 4 or 5 moist
Chroma: 3 or 4 dry
Texture of the fine-earth fraction: Gypsiferous silt loam or clay loam
Clay content: 20 to 31 percent
Calcium carbonate equivalent in the fine-earth fraction: 0 to 10 percent
Gypsum: 0 to 40 percent
Sodium adsorption ratio: 22 to 385
Electrical conductivity: 6 to 484 dS/m

Cnyz horizon (where present)
Texture of the fine-earth fraction: Silt loam or gypsiferous silty clay loam
Clay content: 20 to 35 percent
Gypsum: 1 to 30 percent
Sodium adsorption ratio: 40 to 200
Electrical conductivity: 40 to 180 dS/m

Cnz horizon
Chroma: 3 or 4 dry
Texture of the fine-earth fraction: Loam, sandy loam, silt loam, silty clay loam, or silty clay
Clay content: 14 to 35 percent in the upper part, 35 to 45 percent in the lower part
Gypsum: 0 to 30 percent
Sodium adsorption ratio: 40 to 200
Electrical conductivity: 40 to 165 dS/m

Umberci Series

The Umberci series consists of soils that are very shallow to bedrock, are somewhat excessively drained, and formed in residuum and colluvium derived from limestone and dolomite. These soils are on mountains and hills (fig. 15). Slopes range from 30 to 75 percent. The mean annual precipitation is about 140 millimeters, and the mean annual air temperature is about 16.5 degrees C. The frost-free period is 210 to 320 days.

Taxonomic class: Loamy-skeletal, carbonatic, thermic Lithic Torriorthents

Typical Pedon

Umberci very gravelly sandy loam in an area of Umberci-Rock outcrop association, 30 to 75 percent slopes (fig. 16); at an elevation of 1,267 meters; in San Bernardino County, California; about 9.1 kilometers east and 2 kilometers north of Primm, Nevada; 260 meters north and 550 meters west of the southeast corner of sec. 5, T. 17 N., R. 14 E., San Bernardino Base and Meridian; USGS Ivanpah Lake, California, 7.5-minute

Figure 15.—A typical area of Umberci soils in the Clark Mountain BLM Grazing Allotment.

topographic quadrangle; lat. 35 degrees, 37 minutes, 21 seconds N. and long. 115 degrees, 29 minutes, 29 seconds W.; UTM 11S, 636618e, 3943125n; DTM: NAD83.

Surface rock fragments: 74 percent gravel, 15 percent cobbles, 5 percent stones, and 1 percent boulders

A—0 to 1 centimeter (0 to 0.5 inch); pale brown (10YR 6/3) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots throughout; few very fine tubular pores; 35 percent gravel, 1 percent cobbles, and 1 percent stones; strongly effervescent; moderately alkaline (pH 8.2); diffuse smooth boundary.

Bkq—1 to 13 centimeters (0.5 to 5 inches); pale brown (10YR 6/3) very gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots throughout; few very fine vesicular pores; 3 percent fine distinct irregular very weakly cemented very pale brown (10YR 7/3) masses of carbonate with clear boundaries on undersides of rock fragments; 3 percent distinct very pale brown (10YR 7/3) silica on undersides of rock fragments; 45 percent gravel and 1 percent cobbles; violently effervescent (65 percent calcium carbonate); moderately alkaline (pH 8.4); abrupt irregular boundary.

R—13 centimeters (5 inches); 1- to 5-centimeters thick, highly fractured limestone above indurated limestone bedrock (fractures are greater than 10 centimeters apart); few fine roots.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative following summer convection storms; typic aridic moisture regime

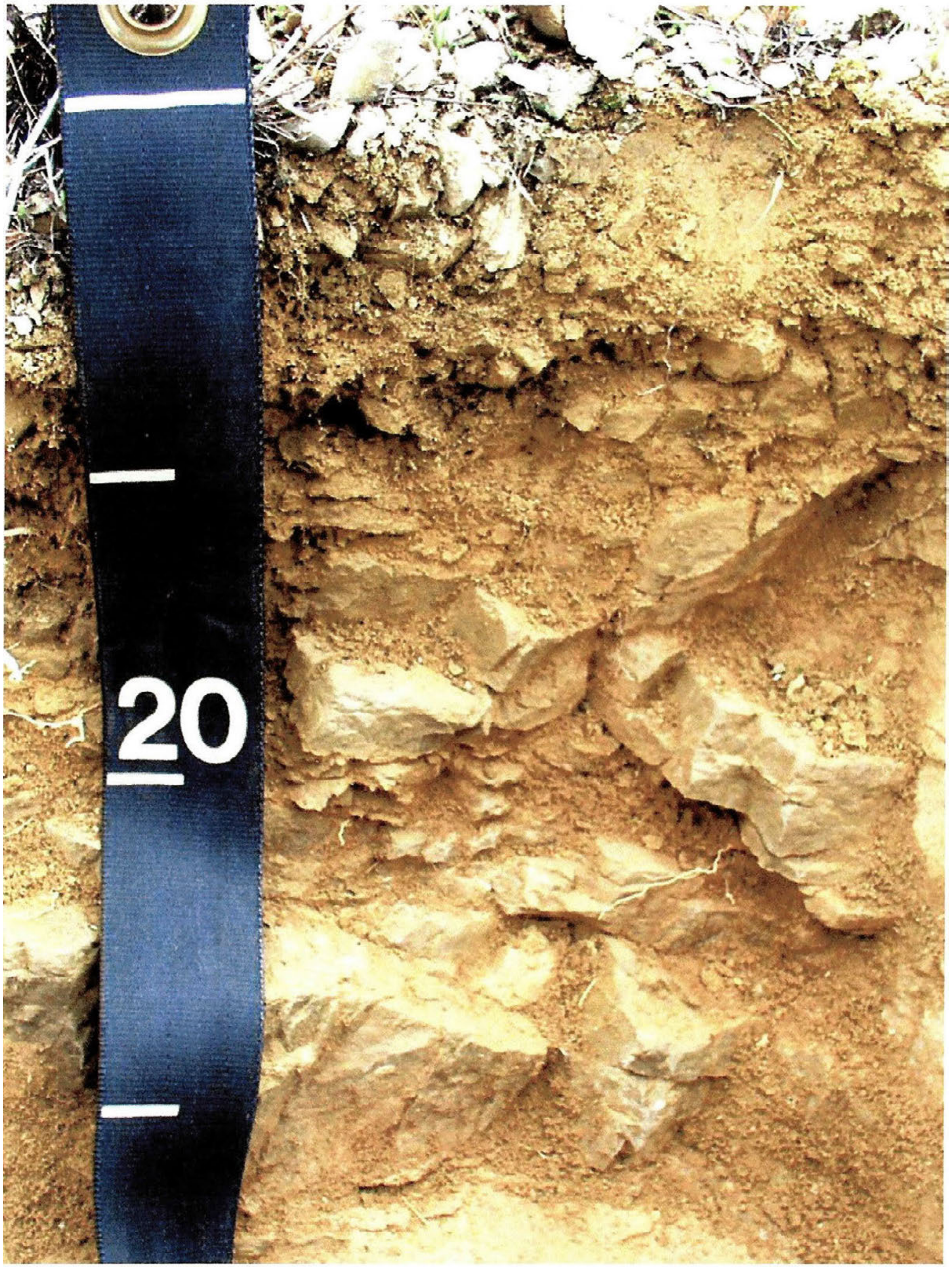

Figure 16.—A typical profile of Umberci soil in an area of Umberci-Rock outcrop association, 30 to 75 percent slopes.

Soil temperature: 15 to 22 degrees C
Depth to lithic contact: 12 to 25 centimeters

Control Section
Clay content: 8 to 14 percent
Rock fragments: Averages 35 to 55 percent, mainly gravel
Calcium carbonate equivalent: Averages 50 to 65 percent in the smaller-than-2-

millimeters fraction and 55 to 70 percent in the smaller-than-20-millimeters fraction

A horizon
Value: 6 dry, 3 to 5 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Sandy loam or fine sandy loam
Rock fragments: Averages 20 to 50 percent, mainly gravel

Bkq or Bk horizon
Value: 6 or 7 dry, 3 to 5 moist
Texture of the fine-earth fraction: Sandy loam or fine sandy loam
Rock fragments: Averages 35 to 50 percent, mainly gravel
Other features: The Bk horizon is not thick enough or does not have enough of a difference in calcium carbonate equivalent to be a calcic horizon.

Ustidur Series

The Ustidur series consists of soils that are very shallow and shallow over a duripan, are well drained, and formed in alluvium derived from metamorphic rock. These soils are on partial ballenas. Slopes range from 8 to 30 percent. The mean annual precipitation is about 200 millimeters, and the mean annual air temperature is about 16 degrees C. The frost-free period is 180 to 240 days.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic, shallow Cambidic Haplodurids

Typical Pedon

Ustidur very gravelly sandy loam, 8 to 30 percent slopes; at an elevation of 1,411 meters; in San Bernardino County, California; 30 meters east and 170 meters south of the northwest corner of sec. 1, T. 14 N., R. 17 E., San Bernardino Base and Meridian; USGS Hart Peak, California, 7.5-minute topographic quadrangle; lat. 35 degrees, 19 minutes, 47.50 seconds N. and long. 115 degrees, 6 minutes, 28.60 seconds W.; UTM 11S, 671969e, 3911367n; DTM: NAD83.

Surface rock fragments: 75 percent gravel, 5 percent cobbles, and 1 percent stones

A—0 to 6 centimeters (0 to 2.5 inches); grayish brown (10YR 5/2) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine interstitial and common fine tubular pores; 5 percent fine gravel, 35 percent medium and coarse gravel, and 1 percent cobbles; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—6 to 25 centimeters (2.5 to 10 inches); brown (10YR 5/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine tubular pores; common prominent white (10YR 8/1) coats of calcium carbonate on bottom faces of peds; 1 percent fine prominent platy white (10YR 8/1) masses of carbonate with sharp boundaries on undersides of rock fragments; 5 percent fine gravel, 45 percent medium and coarse gravel, and 1 percent cobbles; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

2Bqk—25 to 44 centimeters (10 to 17.5 inches); white (10YR 8/1) 65-percent-discontinuous very weakly cemented duripan with thin discontinuous laminar caps, light gray (10YR 7/2) moist; weak very thin platy structure; moderately hard, friable, brittle; 5 percent fine gravel, 55 percent medium and coarse gravel, and 3 percent cobbles; violently effervescent; abrupt wavy boundary.

2Bqkm—44 to 46 centimeters (17.5 to 18 inches); white (10YR 8/1) continuous very weakly cemented duripan with a thin (1 millimeter) laminar cap, very pale brown (10YR 8/2) moist; massive; hard, friable, brittle; violently effervescent.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part from December to March and intermittently moist for 10 to 20 days from July to October following summer convection storms; aridic bordering on ustic moisture regime
Soil temperature: 15 to 18 degrees C
Depth to a duripan: 10 to 36 centimeters (4 to 14 inches)

Control section
Clay content: 8 to 18 percent
Rock fragments: 45 to 75 percent, mainly gravel

A horizon
Chroma: 2 to 4

Bk horizon
Value: 5 to 7 dry
Reaction: Moderately alkaline or strongly alkaline

2Bqk and 2Bqkm horizons
Cementation: Weakly cemented to strongly cemented with a discontinuous 1 to 2 millimeter laminar cap; 50 to 90 percent cemented in the upper horizon

Weiser Series

The Weiser series consists of very deep, well drained soils that formed in alluvium derived from limestone and dolomite. These soils are on fan remnants and inset fans. Slopes range from 2 to 30 percent. The mean annual precipitation is about 125 millimeters, and the mean annual air temperature is about 18 degrees C. The frost-free period is 210 to 300 days.

Taxonomic class: Loamy-skeletal, carbonatic, thermic Typic Haplocalcids

Typical Pedon

Weiser sandy loam, 2 to 8 percent slopes; at an elevation of 1,020 meters; in San Bernardino County, California; 525 meters south and 505 meters west of the northeast corner of sec. 34, T. 18 N., R. 14 E., San Bernardino Base and Meridian; USGS State Line Pass, Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 38 minutes, 42.00 seconds N. and long. 115 degrees, 27 minutes, 20.30 seconds W.; UTM 11s, 639816e, 3945674n; DTM: NAD83.

Surface rock fragments: 10 percent fine gravel, 80 percent medium and coarse gravel, and 5 percent cobbles

A—0 to 6 centimeters (0 to 2 inches); light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; strong very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots throughout; common fine tubular and many fine and very fine vesicular pores; 3 percent fine gravel, 7 percent medium and coarse gravel, and 1 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
Bkq1—6 to 69 centimeters (2 to 27 inches); light gray (10YR 7/2) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots throughout; common very fine irregular pores; 1 percent prominent yellowish brown (10YR 5/4) silica

on undersides of rock fragments and 25 percent prominent light gray (10YR 7/2) coats of carbonate on rock fragments; 5 percent fine prominent irregular very weakly cemented very pale brown (10YR 8/2) masses of carbonate with diffuse boundaries in the matrix and 15 percent fine prominent irregular very weakly cemented very pale brown (10YR 8/2) masses of carbonate with diffuse boundaries on undersides of rock fragments; 5 percent fine gravel, 50 percent medium and coarse gravel, and 1 percent cobbles; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bkq2—69 to 115 centimeters (27 to 45 inches); light gray (10YR 7/2) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; few fine and common very fine roots throughout; 1 percent prominent yellowish brown (10YR 5/4) silica on undersides of rock fragments and 8 percent prominent very pale brown (10YR 8/2) coats of carbonate on undersides of rock fragments; 20 percent fine gravel, 40 percent medium and coarse gravel, 5 percent cobbles, and 5 stones; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Ck—115 to 154 centimeters (45 to 61 inches); light yellowish brown (10YR 6/4) extremely gravelly loamy fine sand, dark yellowish brown (10YR 4/4) moist; single grain; soft, very friable, nonsticky and nonplastic; 5 percent distinct light gray (10YR 7/2) carbonate coats on rock fragments; 10 percent fine gravel, 55 percent medium and coarse gravel, and 5 percent cobbles; violently effervescent; moderately alkaline (pH 8.4).

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part during winter and spring and intermittingly moist in the upper part following summer thunderstorms; typic aridic moisture regime
Soil temperature: 17 to 22 degrees C
Depth to a calcic horizon: 5 to 38 centimeters
Control section clay content: 6 to 18 percent
Rock fragments: Averages 50 to 80 percent, mainly gravel
Calcium carbonate equivalent in the smaller-than-20-millimeters fraction: 40 to 60 percent

A horizon
Hue: 7.5YR or 10YR
Value: 6 or 7 dry, 4 or 5 moist
Chroma: 2 to 4
Texture of the fine-earth fraction: Sandy loam, fine sandy loam, or loam

Bk or Bw horizon (where present)
Hue: 7.5YR or 10YR
Value: 5 or 6 dry, 3 or 4 moist
Chroma: 3 or 4 dry or moist
Texture of the fine-earth fraction: Loam or fine sandy loam
Consistence: Soft or slightly hard, nonsticky or slightly sticky, nonplastic or slightly plastic
Rock fragments: 15 to 50 percent, mainly gravel
Reaction: Moderately alkaline or strongly alkaline
Calcium carbonate equivalent in the fine-earth fraction: 10 to 20 percent

Bkq horizon
Hue: 7.5YR or 10YR
Value: 6 or 7 dry, 5 or 6 moist
Chroma: 2 to 4 dry or moist
Texture: Sandy loam, fine sandy loam, or loam

Structure: Massive, single grain, or weak subangular blocky
Consistence: Loose or soft, nonsticky or slightly sticky
Rock fragments: 35 to 85 percent, mainly gravel
Reaction: Moderately alkaline or strongly alkaline
Calcium carbonate equivalent in the fine-earth fraction: 20 to 47 percent
Other features: 0 to 15 percent nodules or concretions of calcium carbonate; thin strata of loamy sand or sand in some pedons

Ck horizon
Texture of the fine-earth fraction: Loamy fine sand or sandy loam
Structure: Single grain or massive
Consistence: Loose or soft
Rock fragments: 60 to 85 percent, mainly gravel
Calcium carbonate equivalent in the fine-earth fraction: 35 to 47 percent

Zeheme Series

The Zeheme series consists of very shallow and shallow, well drained soils that formed in residuum and colluvium derived from dolomite and limestone. These soils are on summits and side slopes of low mountains and hills. Slopes range from 8 to 75 percent. The mean annual precipitation is about 200 millimeters, and the mean annual air temperature is about 16 degrees C. The frost-free period is 210 to 270 days.

Taxonomic class: Loamy-skeletal, carbonatic, thermic Lithic Haplocalcids

Typical Pedon

Due to the small extent of these soils in the survey area, a typical pedon from the adjoining survey area in Clark County, Nevada, is described.

Zeheme extremely stony fine sandy loam, 30 to 75 percent slopes; at an elevation of 1,295 meters; in Clark County, Nevada; about 6 miles southwest of Goodsprings, Nevada, in the Spring Mountain Range; in an unsectionalized area with an estimated projection of sec. 29, T. 25 S., R. 58 E., Mount Diablo Base and Meridian; USGS State Line Pass, Nevada, 7.5-minute topographic quadrangle; lat. 35 degrees, 44 minutes, 15 seconds N. and long. 115 degrees, 29 minutes, 17 seconds W.; UTM 11s, 636723e, 3955888n; DTM: NAD83.

Surface rock fragments: 70 percent gravel

A—0 to 5 centimeters (0 to 2 inches); light brownish gray (10YR 6/2) extremely stony fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and slightly plastic; common very fine roots; many very fine and few fine interstitial and tubular pores; 3 percent fine gravel, 35 percent medium and coarse gravel, 15 percent cobbles, and 18 percent stones; violently effervescent (10 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.4); abrupt smooth boundary.

Bk—5 to 23 centimeters (2 to 9 inches); pale brown (10YR 6/3) very gravelly fine sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few fine roots; common very fine and few fine tubular pores; 4 percent fine gravel, 37 percent medium and coarse gravel, and 10 percent cobbles; many medium (5 to 15 millimeters) and thick (15 to 20 millimeters) coats and pendants of calcium carbonate on undersides of coarse fragments; violently effervescent (20 percent calcium carbonate equivalent in the fine-earth fraction); moderately alkaline (pH 8.4); abrupt smooth boundary.

R—23 centimeters (9 inches); gray (10YR 5/1), hard, fractured limestone bedrock with many thin to thick coats of calcium carbonate between fractures.

Range in Characteristics

Soil moisture control section: Usually dry, moist in some part from December to March and for 10 to 20 days cumulative in short, intermittent periods from June to September following summer convection storms
Soil temperature: 16 to 19 degrees C
Depth to bedrock: 18 to 36 centimeters (7 to 14 inches)
Calcium carbonate equivalent in the smaller-than-20-millimeters fraction: 40 to 80 percent

Control section
Clay content: Averages 8 to 18 percent
Rock fragments: Averages 35 to 60 percent

A horizon
Value: 5 or 6 dry, 4 or 5 moist
Chroma: 2 to 4

Bk horizon
Hue: 10YR or 7.5YR
Value: 5 or 6 dry, 4 or 5 moist
Chroma: 3 or 4
Texture: Very gravelly fine sandy loam or very gravelly sandy loam
Structure: Weak or moderate, fine or medium, subangular blocky or massive
Consistence: Nonplastic or slightly plastic
Rock fragments: 35 to 60 percent
Other features: Common thin to very thick coats and pendants of calcium carbonate on vertical sides and undersides of rock fragments; 5 percent or more secondary calcium carbonate

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Glossary

AASHTO classification. A system for classifying soils specifically for geotechnical engineering purposes that is related to highway and airfield construction. It is based on particle-size distribution and Atterberg limits.

AASHTO group index number (GIN). An empirical index number used to evaluate clayey and silty clay material.

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone. See Alluvial fan.

Alluvial fan. A low, outspread mass of loose material and/or rock material washed down the sides of mountains and hills. It commonly has gentle slopes and is shaped like an open fan or a segment of a cone. It is deposited by a stream at the place where the stream issues from a narrow mountain valley or where a tributary stream is near or at its junction with the main stream. An alluvial fan is steepest near its apex that points upstream, and it slopes gently and convexly outward with a gradual decrease in gradient.

Alluvial flat. A nearly level, graded, alluvial surface in a bolson or semibolson. It commonly does not exhibit traceable channels, terraces, or flood plain levels.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aridic moisture regime. A soil moisture regime in which the soils are dry for at least one-half of the year. It is common in areas that have an aridic climate but also occurs in a few areas that have a semiarid climate and either have physical properties that keep the soils dry, such as a crusty surface that virtually precludes the infiltration of water, or have steep slopes with a high rate of runoff. Little, if any, leaching occurs in the soils in this moisture regime, and soluble salts accumulate in the soils if there is a source of salts.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The volume of water that should be available to plants if the soil, inclusive of fragments, were at field capacity. It is commonly estimated as the difference between the amount of water at field capacity and the amount at wilting point with adjustments for salinity, fragments, and rooting depth. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 2.5
Low	2.5 to 5.0
Moderate	5.0 to 7.5
High	7.5 to 10.0
Very high	more than 10.0

AWC. See Available water capacity.

Backslope. The hillslope profile position that forms the steepest and generally linear, middle portion of the slope. In profile, backslopes commonly are bounded by a convex shoulder above and a concave footslope below. They may or may not include cliff segments, or free faces. Backslopes are commonly erosional forms produced by mass movement, colluvial action, and running water.

Badland. A landscape that is intricately dissected and is characterized by a very fine drainage network with high drainage density and short, steep slopes with narrow interfluves. Badland develops on surfaces that have little, if any, vegetative cover, are underlain by unconsolidated or poorly cemented material (clay, silt, or sand), and in some areas have soluble minerals, such as gypsum and halite.

Ballena. A fan remnant having a distinctively rounded surface of fan alluvium. The broadly rounded shoulders meet from either side to form a narrow summit and merge smoothly with concave side slopes. Concave, short pediments form smoothly rounded drainageways between adjacent ballenas. A partial ballena is a fan remnant large enough to retain some relict fan surface on a remnant summit.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Basin. The nearly level or gently sloping bottom surface of a wide structural depression between mountain ranges.

Basin floor. A general term for the nearly level, lowermost part of intermontane basins, or bolsons and semibolsons. The floor includes all of the alluvial, eolian, and erosional landforms below the piedmont slope.

Batholith. A large body of igneous intrusive (plutonic) rock, commonly regional in extent, such as the Sierra Nevada batholith.

Beach terrace. A landform that consists of a wave-cut scarp and wave-built terrace of well-sorted marine and lacustrine sand and gravel. Colloquially, in the western United States, relict shoreline from pluvial lakes, generally restricted to the sides of valleys.

Bedrock. A general term for the solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant

layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bolson. An internally drained (closed) intermontane basin into which drainageways from surrounding mountains converge inward toward a central depression.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Bulk density. A measurement of the oven-dry weight of the soil material that is less than 2 millimeters in diameter per unit volume. Common measurements are taken at $^1/_3$-, $^1/_{10}$-, or 15-bar moisture tension. Bulk density influences plant growth and engineering applications. It is used to convert measurements from a weight basis to a volume basis. Within a family particle-size class, bulk density is an indicator of how well plant roots are able to extend into the soil. Bulk density is used to calculate porosity.

Butte. An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs. It is characterized by a summit width that is less than the height of bounding escarpments, is commonly topped by a cap of resistant rock, and represents an erosional remnant carved from flat-lying rock.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Calcic horizon. A mineral soil horizon of secondary carbonate enrichment that is more than 15 centimeters thick, has a calcium carbonate equivalent of more than 15 percent, and has a calcium carbonate equivalent at least 5 percent higher than the underlying horizon.

Calcium carbonate equivalent. The amount of calcium carbonate in a soil measured by treating the soil sample with hydrochloric acid (HCl). The evolved carbon dioxide (CO_2) is measured, and the amount of carbonate is calculated as calcium carbonate ($CaCO_3$).

Caliche. A general term for a prominent zone of secondary carbonate accumulation in surficial material of warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Fine crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) material. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other cementing minerals (carbonates, silicate, and sulfate) may be present. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Cambic horizon. A mineral soil horizon that has the texture of loamy very fine sand or finer, has soil structure rather than rock structure, and contains some weatherable minerals. It is characterized by the alteration or removal of mineral material as indicated by mottling or gray color, stronger chroma or redder hue than the underlying horizons, or the removal of carbonates. The cambic horizon lacks cementation or induration and has too few evidences of illuviation to meet the requirements for an argillic horizon.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence of soils on a landscape that are about the same age and formed in similar kinds of parent material under similar climatic conditions but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity (CEC). The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

CEC. See Cation-exchange capacity.

Cement rock. Shaly limestone used in the manufacture of cement.

Channel (colloquial). The bed of a single or braided watercourse that commonly is barren of vegetation and formed in modern alluvium. Channels may be enclosed by banks or splayed across a fan surface and slightly mounded. They include bars and mounds of cobbles and stones.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clayey. Includes the texture classes sandy clay, silty clay, and clay.

Claypan. A dense, compact, slowly permeable layer in the subsoil that has a much higher content of clay than the overlying material. A claypan commonly is hard when dry and plastic or sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. See Rock fragments.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility percent.

Colluvium. Unconsolidated, unsorted earth material transported or deposited on side slopes and/or at the base of slopes by mass movement, or direct gravitational action, and by local unconcentrated runoff.

Compaction. The process by which the soil grains are rearranged to decrease void space and bring them into closer contact with one another, thereby increasing bulk density.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a

point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter, commonly with a matrix of sand and finer textured material. Cementing agents include silica, calcium carbonate, and iron oxide. Conglomerate is the consolidated equivalent of gravel.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine grained soil material stabilized around shrubs or small trees.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbation. A collective term used to describe all soil movement as a result of frost action, including the folding, breaking, and dislocating of beds and lenses of unconsolidated material.

Cryptogamic crust. A type of microbiotic crust consisting of a thin, biotic layer at the ground surface. It is composed dominantly of cryptogams, such as algae, lichen, mosses, lichens, and liverworts. It is most common in semiarid and arid areas. (See Microbiotic crust.)

Cuesta. An asymmetric, homoclinal ridge capped by resistant rock layers of slight or moderate dip (less than 10 degrees, or 16 percent). It is produced by differential erosion of interbedded resistant and weak rocks. A long, gently sloping to sloping face (dip slope), roughly paralleling the inclined beds, opposes a relatively short, steep face (scarp) cut across the tilted rocks.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Debris flow (mass movement). The process, associated sediment (debris flow deposit), or resultant landform characterized by a very rapid type of flow dominated by sudden downslope movement of a mass of rock, soil, and mud (more than 50 percent particles that are more than 2 millimeters in size) that behaves much like viscous fluid whether it is saturated or relatively dry.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deep soil. See Depth, soil.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to bedrock (in tables). Bedrock is too near the surface for the specified use.

Desert pavement. A natural, residual concentration of wind-polished, closely packed gravel, boulders, and other rock fragments that mantle a desert surface where wind action and sheetwash have removed the smaller particles. It commonly protects the underlying finer grained material from further deflation. The coarse fragments commonly are cemented with mineral material.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedded rock (for example, the long, gently inclined surface of a cuesta).

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,*and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area.

Draw. A small stream channel that generally is more open and has a broader floor than a ravine or gulch.

Dune. A low mound, ridge, bank, or hill of loose, windblown, granular material (generally sand), either barren or covered with vegetation, that is capable of movement from place to place but always retains its characteristic shape.

Duripan. A subsurface soil horizon that is cemented with illuvial silica, commonly opal or microcrystalline forms, to the degree that less than 50 percent of the volume of air-dry fragments will slake in water or hydrochloric acid.

EC. See Electrical conductivity.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Electrical conductivity (EC). The electrolytic conductivity of an extract from saturated soil paste.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian material. Material transported and deposited by wind, including earth material such as dune sand, sand sheets, loess, and clay.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Epipedon. A soil horizon, at or near the surface, in which most of the rock structure has been destroyed. It is darkened by organic matter, shows evidence of eluviation, or both.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. The term is most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Extrusive. Pertaining to igneous rock and sediment derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface, including lava flows and tephra deposits.

Family, soil. The most specific hierarchical category in soil taxonomy.

Fan apron. A sheetlike mantle of relatively young alluvium and soils covering part of an older fan piedmont (or alluvial fan in some areas), commonly thicker and further downslope than a fan collar (midfan or midfan piedmont). It buries an older soil that can be traced to the edge of the fan apron, where the older soil emerges as the land surface, or a relict soil. Buried soils do not occur within the mantle of the fan apron itself.

Fan piedmont. The most extensive landform on piedmont slopes. It forms by either the lateral downslope coalescence of mountain-front alluvial fans into one generally smooth slope with or without the transverse undulations of the semiconical alluvial fans or by the accretion of fan aprons.

Fan remnant. A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, fan aprons, inset fans, and fan skirts, that either have been dissected (erosional fan remnants) or partially buried (nonburied fan remnants). An erosional fan remnant has a relatively flat summit that is a relict fan surface. A nonburied fan remnant is a relict surface in its entirety.

Fan skirt. Smooth, laterally-coalescing, small alluvial fans that issue from gullies cut into the fan piedmont of a basin or that are extensions of the inset fans of the fan piedmont and that merge with the basin floor at the toeslope. Generally, these are younger fans overlapping older fan surfaces.

Fan terrace. See Fan remnant.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Flood plain. The nearly level plain that borders a stream and is subject to inundation under floodstage conditions unless protected artificially. It is commonly a constructional landform consisting of sediment deposited during overflow and lateral migration of a stream.

Fluvial. Of or pertaining to rivers; produced by river action.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Fragments. Unattached cemented pieces of bedrock, bedrocklike material, durinodes, concretions, and nodules 2 millimeters in diameter or larger in mineral soils; woody material 20 millimeters in diameter or larger in organic soils.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. The microrelief of soils produced by expansion and contraction with changes in moisture content. It is characteristic of soils containing large amounts of smectitic clay and that swell and shrink considerably with wetting and drying. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel to the slope. Also referred to, in part or in total, as crabhole, Bay of Biscay, or hushabye in older literature.

Granitic. A textural term commonly pertaining to an igneous intrusive rock of felsic to intermediate composition. Referring to granitelike rock, but not necessarily true granite. Commonly applied to granite, quartz monzonite, granodiorite, and diorite.

Granite. A felsic igneous intrusive rock containing quartz and orthoclase with smaller amounts of sodic plagioclase and commonly muscovite.

Granodiorite. An igneous intrusive rock that is intermediate between felsic and mafic in composition and contains quartz and somewhat more plagioclase than orthoclase.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides cut by the concentrated, but intermittent, flow of water commonly during and immediately following heavy rainfall or following icemelt or snowmelt. A gully generally is an obstacle to wheeled vehicles and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Gypsum content. The percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size.

Halophytic. Pertaining to vegetation that is adapted to salty soils.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hill. A generic term for an area of the land surface that rises as much as 1,000 feet (300 meters) above surrounding lowlands, commonly has restricted summit area relative to surrounding surfaces, and has a well-defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and commonly is dependent on local usage.

Holocene. The epoch of the Quaternary period of geologic time that extends from the end of the Pleistocene (about 10 to 12 thousand years ago) to the present.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or

lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Hummock. Rounded or conical mound or other small rise.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Inset fan. Specific name for the flood plain of an ephemeral stream that is confined between fan remnants, ballenas, basin floor remnants, or closely opposed fan toeslopes of a basin.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that does not flow year-round (commonly is dry for 3 months or more annually), and its channel generally is below the local water table. It flows only when it receives baseflow during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Intrusive. Pertaining to igneous rock derived from molten matter (magma) that invaded pre-existing rock and cooled below the surface of the earth.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

K factor. A measurement of potential soil erodibility caused by detachment of soil particles by water.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Clastic sediment and chemical precipitates deposited in lakes.

Lake plain. A nearly level surface marking the floor of an extinct lake filled by well-sorted, generally fine textured, stratified deposits.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lake shore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landform. Any physical, recognizable form or feature on the earth's surface that has a characteristic shape and was produced by natural causes.

Landscape. A collection of related, natural landforms; commonly, the land surface that can be comprehended in a single view.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Leaching. The removal of soluble material from soil or other material by percolating water.

LEP. See Linear extensibility percent.

Limestone. A sedimentary rock consisting mainly of calcium carbonate (more than 50 percent) dominantly in the form of calcite. Limestone is commonly formed by a combination of organic and inorganic processes and includes chemical and clastic (soluble and insoluble) constituents. Fossils are common in limestone.

Linear extensibility percent (LEP). The linear expression of the volume difference between the water content of the natural soil fabric at $^1/_3$-bar or $^1/_{10}$-bar and oven dryness. The volume change is reported as a percent for the whole soil.

Liquid limit (LL). The moisture content at which the soil passes from a plastic to a liquid state.

LL. See Liquid limit.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy. Includes the texture classes coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, and silty clay loam.

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized clastics.

Magma. Molten rock material that originates deep in the earth and solidifies to form igneous rock.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat topped and commonly isolated land mass that is bounded by steep slopes or precipitous cliffs and has a nearly horizontal summit that consists of layers of resistant rock and is wider than the height of bounding escarpments. Also used to designate broad structural benches and alluvial terraces at intermediate levels in stepped sequences of platforms bordering canyons and valleys.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement in the earth's crust. Nearly all such rocks are crystalline. Examples are schist, gneiss, quartzite, slate, and marble.

Metasediment. A sediment or sedimentary rock that shows evidence of having been subjected to metamorphism.

Metavolcanic. A volcanic rock that shows evidence of metamorphism but has not been fully metamorphosed into metamorphic rock.

Microbiotic crust. A thin surface layer (crust) of soil particles bound together primarily by living organisms and their organic byproducts. Thickness ranges from less than 1 centimeter to 10 centimeters, and coverage of the ground surface ranges from 10 to 100 percent. The crust stabilizes loose earth material.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately deep soil. See Depth, soil.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface that rises more than 1,000 feet (300 meters) above surrounding lowlands, commonly has limited summit area relative to surrounding surfaces, and generally has steep sides (slopes of more than 25 percent) with or without considerable bare-rock surface. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic and/or volcanic activity and by differential erosion.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

OM. See Organic matter.

Organic matter (OM). Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated and chemically weathered mineral and organic material in which the solum of a soil is formed as a result of pedogenic processes.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pediment. A gently sloping erosional surface at the foot of a receding hill or mountain slope. The surface may be essentially bare, exposing earth material that extends beneath adjacent uplands, or it may be thinly mantled with alluvium and colluvium, ultimately in transit from the upland front to the basin or valley lowland. In hill-footslope terrain, the mantle is designated "pedisediment." The term pediment is used in several geomorphic contexts. Pediments may be classified with respect to (1) landscape positions, for example, intermontane-basin piedmont or valley-border footslope surfaces (respectively, apron and terrace pediments); (2) type of material eroded, either bedrock or regolith; or (3) a combination of the above.

Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that is or formerly was transported across a pediment.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Perched water table. The upper surface of unconfined ground water separated from an underlying main body of ground water by an unsaturated zone.

Percolation. The downward movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

PI. See Plasticity index.

Piedmont (adjective). Lying or formed at the base of a mountain or mountain range; for example, a piedmont terrace or a piedmont pediment.

Piedmont (noun). An area, plain, slope, glacier, or other feature at the base of a mountain; for example, a foothill or bajada. In the United States, the Piedmont is a low plateau that extends from New Jersey to Alabama and lies east of the Appalachian Mountains.

Plasticity index (PI). The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. A comparatively flat area of great extent and elevation. Specifically, an extensive land region considerably elevated (more than 100 meters) above adjacent lower lying terrain that is commonly limited on at least one side by an abrupt descent and has a flat or nearly level surface. A relatively large part of a plateau surface is near summit level.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playas consist of fine grained deposits and may or may not have a high water table and may or may not be saline.

Pleistocene. The epoch of the Quaternary period of geologic time following the Pliocene and preceding the Holocene (approximately 2 million to 10 thousand years ago). Also refers to the corresponding (time-stratigraphic) "series" of earth material.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Pyroclastic. Pertaining to fragmental material produced by commonly explosive aerial ejection of clastic particles from a volcanic vent. Such material may accumulate on land or under water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community differs from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind, proportion, and total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. All unconsolidated earth material above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits. Soil scientists regard as soil only that part of the regolith that has been modified by organisms and soil-forming processes. Most engineers describe the entire regolith, even to a great depth, as "soil."

Relief. The elevations or inequalities of a land surface, considered collectively.

Remnant. The remaining part of a larger landform or land surface that has been dissected or partially buried.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rhyolite. Extrusive igneous rock, generally porphyritic and exhibiting flow texture, with phenocrysts of quartz and alkali feldspar in a glassy cryptocrystalline ground mass. The extrusive equivalent of granite.

Riverwash. Barren alluvial areas of unstabilized sand, silt, clay, or gravel reworked frequently by stream activity.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bedrock, excluding lava and rock-lined pits.

Rock varnish. A thin, dark, shiny film or coating composed of iron oxide with traces of manganese oxide and silica on the surface of pebbles, boulders, and other rock fragments. It is common on rock outcrops in arid regions. It is believed to be caused by exudation of mineralized solutions from within and by deposition from evaporation on the surface.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium. Salinity is expressed as the electrical conductivity of a saturation extract at 25 degrees C. Salinity classes, expressed in millimhos per centimeter, are as follows:

Nonsaline	0 to 2
Very slightly saline	2 to 4
Slightly saline	4 to 8
Moderately saline	8 to 16
Strongly saline	more than 16

Saline-sodic soil. A soil that contains sufficient exchangeable sodium to interfere with the growth of most crops and appreciable quantities of soluble salts. The exchangeable sodium ratio is greater than 0.15; the conductivity of the soil solution, when saturated, is greater than 4 decisiemens per meter (at 25 degrees C); and the pH is commonly 8.5 or less when the soil is saturated.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sandy. Includes the texture classes sand and loamy sand.

Saprolite. Soft, friable, isovolumetrically weathered bedrock that retains the fabric and structure of the parent rock and exhibits extensive intercrystal and intracrystal weathering. In pedology, saprolite has been used to refer to any unconsolidated residual material that underlies the soil and grades to hard bedrock below.

SAR. See Sodium adsorption ratio.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic matter accumulated at or near the surface of the earth under "normal" low temperature and pressure conditions. Sedimentary rock includes the consolidated equivalents of alluvial, colluvial, drift, eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed as a result of the induration of a deposit of clay, silty clay, or silty clay loam and has a tendency to split into thin layers.

Shallow soil. See Depth, soil.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Site index (pinyon and juniper). A designation of the quality of a pinyon or juniper stand based on the basal area in square feet when the stand averages 5 inches in diameter 1 foot above the ground. A site index of 50 means that the stand will have a basal area of 50 square feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 2 percent
Very gently sloping	2 to 4 percent
Gently sloping	4 to 8 percent
Moderately sloping	8 to 15 percent
Strongly sloping	15 to 30 percent
Moderately steep	30 to 50 percent
Steep	50 to 75 percent

Slope (in tables). The slope is steep enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slope aspect. The direction the surface of the soil faces.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^+ to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Nonsodic	0-5:1
Very slightly sodic	5-13:1
Slightly sodic	13-30:1
Moderately sodic	30-45:1
Strongly sodic	45-90:1
Very strongly sodic	more than 90:1

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil erodibility factors. The Kw and Kf factors quantify the susceptibility of soil to detachment by water. These erodibility factors predict the long-term average soil loss that results from sheet and rill erosion when various cropping systems and conservation techniques are used. The whole soil is considered in the Kw factor, but only the fine-earth fraction, which is the material less than 2 millimeters in diameter, is considered in the Kf factor.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A sheetlike concentration of coarse fragments in surficial sediment. In cross section, the line may be marked only by scattered fragments or it may be a discrete layer of fragments. The fragments are more commonly pebbles or cobbles than stones. A stone line generally overlies material that was subject to weathering, soil formation, and erosion before deposition of the overlying material. Many stone lines appear to be buried erosion pavement originally formed by running water on the land surface and concurrently covered by surficial sediment.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stratified. Referring to geologic deposits that were formed, arranged, or laid down in layers. Layers in soils that are a result of the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stream terrace. One of a series of platforms in a stream valley that flanks and is more or less parallel to the stream channel, originally formed near the level of the stream, and represents the dissected remnants of an abandoned flood plain, streambed, or valley floor produced during an earlier period of erosion or deposition.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsidence. The decrease in surface elevation as a result of the drainage of wet soils that have organic layers or semifluid mineral layers.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

T factor. The soil loss tolerance, which is defined as the maximum amount of erosion at which the quality of a soil as a medium for plant growth can be maintained. Maintaining the quality of the soil includes maintaining the surface soil as a seedbed for plants, maintaining the atmosphere-soil interface to allow the entry of air and water into the soil and still protect the underlying soil from wind and water erosion, and maintaining the total soil volume as a reservoir for water and plant nutrients, which is preserved by minimizing soil loss.

Talus. Rock fragments of any size or shape (commonly coarse and angular) at the base of a cliff or very steep rock slope; the accumulated mass of such loose, broken rock formed mainly by falling, rolling, or sliding.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Temperature regime, soil. A system that categorizes for taxonomic purposes general, long-term soil temperature conditions at the standard depth of 20 inches or at the surface of the bedrock, whichever is at a shallower depth. The various regimes are defined according to the freezing point of water or to the high and low extremes for significant biological activity. The regimes, which are defined in "Keys to Soil Taxonomy," are as follows:

Pergellic.—Soils that have a mean annual temperature of less than 32 degrees F and have permafrost.

Cryic.—Soils that have a mean annual temperature of 32 to 47 degrees F and remain cold in summer.

Frigid.—Soils that have a mean annual temperature similar to that of the cryic regime but have a mean summer temperature at least 9 degrees warmer.

Mesic.—Soils that have a mean annual temperature of 47 to 59 degrees F, and the difference between the mean summer and mean winter temperature is more than 9 degrees.

Thermic.—Soils that have a mean annual temperature of 59 to 72 degrees F, and the difference between the mean summer and mean winter temperature is more than 9 degrees.

Hyperthermic.—Soils that have a mean annual temperature of more than 72 degrees F, and the difference between the mean summer and mean winter temperature is more than 9 degrees.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Terrace (geomorphologic). A steplike surface bordering a valley floor or shoreline that represents the former position of a flood plain, lake, or seashore. The term is commonly applied to both the relatively flat summit surface (tread) that has been cut or builtup by stream or wave action and the steeper descending slope (scarp or riser) that grades to a lower base level of erosion. Practically, terraces are considered to be generally flat alluvial areas above the 100-year flood stage.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine." Abbreviations for the texture terms are as follows: *C=clay, CL=clay loam, COS=coarse sand, COSL=coarse sandy loam, FS=fine sand, FSL=fine sandy loam, L=loam, LCOS=loamy coarse sand, LFS=loamy fine sand, LS=loamy sand, LVFS=loamy very fine sand, S=sand, SC=sandy clay, SCL=sandy clay loam, SI=silt, SIC=silty clay, SICL=silty clay loam, SIL=silt loam, SL=sandy loam, VFS=very fine sand,* and *VFSL=very fine sandy loam.* Terms used in lieu of texture descriptions are *WB=weathered bedrock, UWB=unweathered bedrock,* and *SG=sand and gravel.* The texture modifiers that may apply to textural classes are *BY=bouldery, BYV=very bouldery, BYX=extremely bouldery, CB=cobbly, CBV=very cobbly, CBX=extremely cobbly, CN=channery, CNV=very channery, CNX=extremely channery, FL=flaggy, FLV=very flaggy, FLX=extremely flaggy, GR=gravelly, GRV=very gravelly, GRX=extremely gravelly, SR=stratified, ST=stony, STV=very stony,* and *STX=extremely stony.*

Thermic temperature regime. See Temperature regime, soil.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Torric moisture regime. See Aridic moisture regime.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Trafficability. The degree to which a soil is capable of supporting vehicular traffic across a wide range of moisture conditions.

Tuff. A generic term for any consolidated or cemented deposit that is 50 percent volcanic ash (less than 2 millimeters in size). Various types of tuff can be recognized by their composition; acidic tuff is dominantly acidic particles and basic tuff is dominantly basic particles.

Unified soil classification. A system for classifying mineral and organic soils for engineering purposes based on particle-size characteristics, liquid limit, and plasticity index.

Upland (geomorphologic). A general term for the higher land of a region in contrast to the low-lying, adjacent land, such as a valley or plain; land at a higher elevation than the flood plain or low stream terrace; or land above the footslope zone of the hillslope continuum.

Ustic moisture regime. The moisture regime that is intermediate between the aridic and udic regimes. Moisture is limited but is present at times when conditions are suitable for plant growth. The soil moisture control section is moist in some part for more than 180 cumulative days per year or for 90 or more consecutive days.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) that fills or partly fills a valley.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Vegetative cover. The crown cover of all live plants in relation to the ground surface.

Very deep soil. See Depth, soil.

Very shallow soil. See Depth, soil.

Wash (colloquial). The broad, flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium. Where a channel reaches a zone

of ground-water discharge, it is more properly referred to as an intermittent stream channel.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Water table. The upper surface of ground water or the level below which the soil is saturated by water. Also, the top of an aquifer.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

WEG. See Wind erodibility group.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Wind erodibility group (WEG). A grouping of soils that have similar properties affecting their resistance to wind erosion in cultivated areas.

Xeric moisture regime. The typical moisture regime in areas of Mediterranean climates, where it is moist and cool in winter and warm and dry in summer. When potential evapotranspiration is at a minimum, the moisture, which falls in winter, is particularly effective in leaching. The mean annual soil temperature is less than 22 degrees C, and the difference between the mean summer and mean winter soil temperature is 6 degrees.

Xerophytic. Pertaining to vegetation that is adapted to dry areas.

Tables

Table 1.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
3000	Copperworld association, 30 to 60 percent slopes	11,781	9.8
3241	Langwell gravelly loamy sand, 30 to 50 percent slopes	998	0.8
3260	Straycow-Newera-Rubble land association, 4 to 50 percent slopes	102	*
3261	Straycow-Highland association, 8 to 50 percent slopes	776	0.6
3310	Birdspring-Zeheme-Rock outcrop association	1,119	0.9
3320	Umberci-Rock outcrop association, 30 to 75 percent slopes	19,302	16.1
3412	Haleburu association	378	0.3
3420	Hartpeak-Highland association, 15 to 50 percent slopes	3,707	3.1
3520	Arizo loamy sand, 2 to 8 percent slopes	23,734	19.7
3640	Tonopah-Arizo association, 2 to 8 percent slopes	3,471	2.9
3641	Tonopah fine sandy loam, 2 to 8 percent slopes, rarely flooded	2,719	2.3
3650	Weiser association, 2 to 8 percent slopes	3,009	2.5
3660	Colosseum association, 2 to 4 percent slopes	12,905	10.7
4122	Popups sandy loam, 4 to 30 percent slopes	6,051	5.0
4180	Peskah-Arizo association	4,095	3.4
4190	Weiser sandy loam, 2 to 8 percent slopes	1,441	1.2
4200	Owlshead loam, 2 to 30 percent slopes	2,635	2.2
4210	Ustidur extremely gravelly sandy loam, 8 to 30 percent slopes	116	*
4220	Minehart gravelly fine sandy loam, 2 to 8 percent slopes	2,015	1.7
4230	Hoppswell-Ustidur association, 4 to 30 percent slopes	138	0.1
4703	Typic Haplosalids, 0 to 2 percent slopes	2,238	1.9
4711	Bluepoint-Petronodic Haplocalcids association, 0 to 50 percent slopes	2,786	2.3
4760	Hypoint-Pipeflat association, 2 to 8 percent slopes	1,975	1.6
4765	Typic Calcigypsids-Typic Haplosalids association, 0 to 2 percent slopes	7,061	5.9
4770	Haymont-Bluepoint association, 0 to 30 percent slopes	1,314	1.1
4775	Petronodic Haplocalcids-Calcic Petrocalcids association, 0 to 2 percent slopes	2,735	2.3
4820	Playa	4	*
5000	Copperworld-Lithic Ustic Haplargids association, 30 to 60 percent slopes	1,308	1.1
5300	Lithic Ustic Haplocalcids gravelly sandy loam, 30 to 60 percent slopes	324	0.3
NOTCOM	Soils data not complete	---	*
	Total	120,237	100.0

* Less than 0.1 percent.

Table 2.--Land Capability Classification

[Land capability is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over a long period of time. The classifications listed are for nonirrigated soils]

Map symbol and soil name	Land capability
3000:	
Copperworld	8
Copperworld, cool	8
3241:	
Langwell	8
3260:	
Straycow	7s
Newera	7s
Rubble land.	
3261:	
Straycow	7s
Highland	7s
Straycow, moderately sloping	7s
3310:	
Birdspring	7s
Zeheme	7s
Rock outcrop.	
3320:	
Umberci	8
Rock outcrop.	
3412:	
Haleburu	7s
Haleburu, dry	7s
3420:	
Hartpeak	7s
Highland, moist	7s
3520:	
Arizo loamy sand	7e
3640:	
Tonopah	7s
Arizo	7s
3641:	
Tonopah, rarely flooded	7s

Table 2.--Land Capability Classification--Continued

Map symbol and soil name	Land capability
3650:	
Weiser, rarely flooded	7s
Weiser	7s
3660:	
Colosseum, rarely flooded	7s
Colosseum, very rarely flooded	7s
4122:	
Popups	7e
4180:	
Peskah	7s
Arizo	7s
4190:	
Weiser, cool	7e
4200:	
Owlshead	8
4210:	
Ustidur	7s
4220:	
Minehart	7e
4230:	
Hoppswell	7s
Ustidur	7s
4703:	
Typic Haplosalids, ponded	7s
4711:	
Bluepoint	7s
Petronodic Haplocalcids	7e
4760:	
Hypoint, overblown	7e
Pipeflat	7e
4765:	
Typic Calcigypsids	7s
Typic Haplosalids, ponded	7s
4770:	
Haymont	7s
Haymont, moist	7s
Bluepoint	7s

Table 2.--Land Capability Classification--Continued

Map symbol and soil name	Land capability
4775:	
Petronodic Haplocalcids	7e
Calcic Petrocalcids	7e
4820:	
Playa	8w
5000:	
Copperworld	8
Lithic Ustic Haplargids, cool	8
5300:	
Lithic Ustic Haplocalcids	8
NOTCOM:	
Soils data not complete.	

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
3000:					
Copperworld-------------	Shallow Gravelly Loam 5-7" p.z.; R030XB029NV	500	350	250	Blackbrush (CORA)------------
					Big galleta (PLRI3)----------
					Creosote bush (LATR2)--------
Copperworld, cool-------	Shallow Granitic Loam 5-7" p.z.; R030XB057NV	300	200	75	Blackbrush (CORA)------------
					Desert needlegrass (ACSP12)--
					Bush muhly (MUPO2)-----------
					Big galleta (PLRI3)----------
Lithic Torriorthents----	Shallow South Slope; R030XB162CA	450	350	200	Catclaw acacia (ACGR)--------
					Virgin River encelia (ENVI)--
					Buckhorn cholla (OPAC)-------
					Desert needlegrass (ACSP12)--
					Big galleta (PLRI3)----------
Typic Torriorthents-----	Granitic North Slope 5-7" p.z.; R030XB060NV	900	600	400	Big galleta (PLRI3)----------
					Bush muhly (MUPO2)-----------
					Mojave buckwheat (ERFAP)-----
					Misc. shrubs (SSSS)----------
					Ephedra (EPHED)--------------
					Desert needlegrass (ACSP12)--
					White bursage (AMDU2)--------
Arizo, frequently flooded----------------	Sandy Wash; R030XB163CA	600	400	200	Purple sage (SADOI)----------
					Catclaw acacia (ACGR)--------
					Desert almond (PRFA)---------
					Mexican bladdersage (SAME)---
					Burrobrush (HYSA)------------
					Mojave buckwheat (ERFAP)-----
3241:					
Langwell----------------	Limy Hill 5-7" p.z.; R030XB001NV	350	250	100	White bursage (AMDU2)--------
					Creosote bush (LATR2)--------
					Littleleaf ratany (KRER)-----
					Big galleta (PLRI3)----------
Langwell, cool----------	Shallow Gravelly Loam 5-7" p.z.; R030XB029NV	500	350	250	Blackbrush (CORA)------------
					Misc. shrubs (SSSS)----------
					Big galleta (PLRI3)----------
					Creosote bush (LATR2)--------

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
3241:					
Langwell, rarely flooded	Shallow Granitic Loam 5-7" p.z.; R030XB057NV	600	400	250	Blackbrush (CORA)
					Misc. shrubs (SSSS)
					Desert needlegrass (ACSP12)
					Bush muhly (MUPO2)
					Big galleta (PLRI3)
3260:					
Straycow	Coarse Gravelly Loam 5-7" p.z.; R030XB107NV	1,000	800	600	Big galleta (PLRI3)
					Indian ricegrass (ACHY)
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Globemallow (SPHAE)
					Blackbrush (CORA)
					Misc. shrubs (SSSS)
					Winterfat (KRLA2)
Newera	Shallow Gravelly Loam 5-7" p.z.; R030XB029NV	500	350	250	Big galleta (PLRI3)
					Misc. perennial grasses (PPG
					Indian ricegrass (ACHY)
					Desert needlegrass (ACSP12)
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)
					Misc. shrubs (SSSS)
					Creosote bush (LATR2)
Railroad	Stony Loam 5-7" p.z.; R030XB080NV	1,100	800	600	Big galleta (PLRI3)
					Indian ricegrass (ACHY)
					Bush muhly (MUPO2)
					Desert needlegrass (ACSP12)
					Misc. annual forbs (AAFF)
					Misc. perennial forbs (PPFF)
					Globemallow (SPHAE)
					Winterfat (KRLA2)
					Misc. shrubs (SSSS)
					Nevada jointfir (EPNE)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
3260:					
Haleburu family----------	Volcanic Hill 5-7″ p.z.; R030XB070NV	500	350	200	Big galleta (PLRI3)----------
					Desert needlegrass (ACSP12)--
					Bush muhly (MUPO2)-----------
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)-
					Mojave buckwheat (ERFAP)-----
					White bursage (AMDU2)--------
					Misc. shrubs (SSSS)----------
					Parish's goldeneye (VIPA14)--
					Creosote bush (LATR2)--------
					Ephedra (EPHED)--------------
					Littleleaf ratany (KRER)-----
Haleburu----------------	Limy Hill 5-7″ p.z.; R030XB001NV	350	250	100	Fluffgrass (ERPU8)-----------
					Misc. perennial grasses (PPGG
					Big galleta (PLRI3)----------
					Misc. perennial forbs (PPFF)-
					White bursage (AMDU2)--------
					Creosotebush (LATR2)---------
					Misc. shrubs (SSSS)----------
					Littleleaf ratany (KRER)-----
					Desert pepperweed (LEFR2)----
					Fremont's dalea (PSFR)-------
3261:					
Straycow----------------	Volcanic Slope 7-9 p.z.; R030XB071NV	700	500	300	Big galleta (PLRI3)----------
					Desert needlegrass (ACSP12)--
					Bush muhly (MUPO2)-----------
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)-
					Mojave buckwheat (ERFAP)-----
					Ephedra (EPHED)--------------
					Misc. shrubs (SSSS)----------
					Littleleaf ratany (KRER)-----
					Parish's goldeneye (VIPA14)--
Highland----------------	Coarse Gravelly Loam 5-7″ p.z.; R030XB107NV	1,000	800	600	Big galleta (PLRI3)----------
					Indian ricegrass (ACHY)------
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)-
					Globemallow (SPHAE)----------
					Blackbrush (CORA)------------
					Misc. shrubs (SSSS)----------
					Winterfat (KRLA2)------------

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
3261:					
Straycow, moderately sloping----------------	Coarse Gravelly Loam 5-7" p.z.; R030XB107NV	1,000	800	600	Big galleta (PLRI3)----------
					Indian ricegrass (ACHY)------
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)-
					Globemallow (SPHAE)----------
					Blackbrush (CORA)------------
					Misc. shrubs (SSSS)----------
					Winterfat (KRLA2)------------
Lanip-------------------	Claypan 5-7" p.z.; R030XB043NV	1,000	700	450	Big galleta (PLRI3)----------
					Bush muhly (MUPO2)-----------
					Indian ricegrass (ACHY)------
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)-
					Creosote bush (LATR2)--------
					Nevada jointfir (EPNE)-------
					Misc. shrubs (SSSS)----------
					Littleleaf ratany (KRER)-----
					Spiny hopsage (GRSP)---------
					White bursage (AMDU2)--------
					Winterfat (KRLA2)------------
Arizo-------------------	Upland Wash; R030XB051NV	600	400	200	Big galleta (PLRI3)----------
					Bush muhly (MUPO2)-----------
					Misc. perennial grasses (PPG
					Desert needlegrass (ACSP12)-
					Misc. perennial forbs (PPFF)
					Hollyleaf bursage (AMER)-----
					Misc. shrubs (SSSS)----------
					Burrobrush (HYMEN3)----------
					Anderson's wolfberry (LYAN)-
					Mojave buckwheat (ERFAP)-----
					Littleleaf ratany (KRER)-----
					Apacheplume (FAPA)-----------
					Mexican bladdersage (SAME)--
					Desert almond (PRFA)---------
					Fourwing saltbush (ATCA2)---

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation
		Favorable year	Normal year	Unfavorable year	
		Lb/acre	*Lb/acre*	*Lb/acre*	
3261:					
Haleburu	Limy Hill 5-7″ p.z.; R030XB001NV	350	250	100	Fluffgrass (ERPU8)
					Misc. perennial grasses (PPGG
					Big galleta (PLRI3)
					Misc. perennial forbs (PPFF)
					White bursage (AMDU2)
					Creosotebush (LATR2)
					Misc. shrubs (SSSS)
					Littleleaf ratany (KRER)
					Desert pepperweed (LEFR2)
					Fremont's dalea (PSFR)
3310:					
Birdspring	Shallow Limestone Slope 5-7″ p.z.; R030XA006NV	450	350	275	Desert needlegrass (ACSP12)
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)
					Shadscale (ATCO)
					White bursage (AMDU2)
					Ephedra (EPHED)
					Misc. shrubs (SSSS)
Zeheme	Limestone Hill 5-7″ p.z.; R030XB068NV	250	150	100	Desert needlegrass (ACSP12)
					Arid needlegrass (STAR2)
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)
					Misc. shrubs (SSSS)
					Blackbrush (CORA)
					Anderson wolfberry (LYAN)
					Mexican cliffrose (PUME)
					Utah agave (AGUT)
					Creosote bush (LATR2)
					Ephedra (EPHED)
					Littleleaf ratany (KRER)
					Snakeweed (GUTIE)
					Winterfat (KRLA2)
					Rayless goldenhead (ACSP)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
3310:					
Potosi	Shallow Limestone Slope 7-9″ p.z.; R030XC008NV	600	450	300	Arid needlegrass (STAR2)
					Desert needlegrass (ACSP12)
					Muttongrass (POFE)
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)
					Misc. shrubs (SSSS)
					Fourwing saltbush (ATCA2)
					Spiny hopsage (GRSP)
					Stansbury cliffrose (PUST)
					Ephedra (EPHED)
Birdspring	Shallow Limestone Slope 5-7″ p.z.; R030XA006NV	450	350	275	Desert needlegrass (ACSP12)
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)
					Shadscale (ATCO)
					White bursage (AMDU2)
					Ephedra (EPHED)
					Misc. shrubs (SSSS)
Birdspring, steep	Limestone Hill 5-7″ p.z.; R030XA002NV	250	175	75	Big galleta (PLRI3)
					Desert needlegrass (ACSP12)
					Misc. perennial forbs (PPFF)
					Shadscale (ATCO)
					White bursage (AMDU2)
					Misc. shrubs (SSSS)
					Torrey ephedra (EPTO)
					Desertholly (ATHY)
3320:					
Umberci	Shallow Limestone Slope 5-7" p.z.; R030XB160CA	200	125	75	Broom snakeweed (GUSA2)
					Virgin River encelia (ENFRV)
					Utah mortonia (MOUT)
					California buckwheat (ERFA2)
Umberci, moist	Gravelly Loam 5-7″ p.z.; R030XB102NV	500	350	200	White bursage (AMDU2)
					Big galleta (PLRI3)
					Winterfat (KRLA2)
					Creosote bush (LATR2)
					Spiny hopsage (GRSP)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
3320:					
Colosseum, occasionally flooded----------------	Broad Gravelly Wash; R030XB159CA	550	400	250	White brittlebush (ENFA)-----
					Catclaw acacia (ACGR)--------
					Burrobrush (HYSA)------------
					Anderson wolfberry (LYAN)----
Umberci, warm-----------	Limy Hill 5-7" p.z.; R030XB001NV	350	250	100	White bursage (AMDU2)--------
					Creosote bush (LATR2)--------
					Littleleaf ratany (KRER)-----
					Big galleta (PLRI3)----------
Umberci, cool-----------	Loamy Hill 5-7" p.z.; R030XB002NV	250	150	50	Shadscale (ATCO)-------------
					Indian ricegrass (ACHY)------
					Desert needlegrass (ACSP12)--
					Ephedra (EPHED)--------------
3412:					
Haleburu----------------	Limy Hill 5-7" p.z.; R030XB001NV	350	250	100	Fluffgrass (ERPU8)-----------
					Misc. perennial grasses (PPGG
					Big galleta (PLRI3)----------
					Misc. perennial forbs (PPFF)-
					White bursage (AMDU2)--------
					Creosotebush (LATR2)---------
					Misc. shrubs (SSSS)----------
					Littleleaf ratany (KRER)-----
					Desert pepperweed (LEFR2)----
					Fremont's dalea (PSFR)-------
Haleburu, dry-----------	Limy Hill 3-5" p.z.; R030XB017NV	125	75	25	Fluffgrass (ERPU8)-----------
					Misc. perennial grasses (PPGG
					Misc. annual forbs (AAFF)----
					Misc. perennial forbs (PPFF)-
					Creosote bush (LATR2)--------
					White bursage (AMDU2)--------
					Misc. shrubs (SSSS)----------

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
3412:					
Newera family	Volcanic Slope 7-9" p.z.; R030XB071NV	700	500	300	Big galleta (PLRI3)
					Desert needlegrass (ACSP12)
					Bush muhly (MUPO2)
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Mojave buckwheat (ERFAP)
					Ephedra (EPHED)
					Misc. shrubs (SSSS)
					Parish's goldeneye (VIPA14)
					Littleleaf ratany (KRER)
Haleburu	Eroded Slope; R030XB084NV	125	75	25	Big galleta (PLRI3)
					Fluffgrass (ERPU8)
					Misc. annual grasses (AAGG)
					Misc. perennial forbs (PPFF)
					Misc. annual forbs (AAFF)
					Creosotebush (LADI2)
					Misc. shrubs (SSSS)
					White bursage (AMDU2)
Nipton	Volcanic Hill 5-7" p.z.; R030XB070NV	500	350	200	Big galleta (PLRI3)
					Desert needlegrass (ACSP12)
					Bush muhly (MUPO2)
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Mojave buckwheat (ERFAP)
					White bursage (AMDU2)
					Misc. shrubs (SSSS)
					Parish's goldeneye (VIPA14)
					Creosote bush (LATR2)
					Ephedra (EPHED)
					Littleleaf ratany (KRER)
3420:					
Hartpeak	Shallow Gravelly Loam 7-9" p.z.; R030XB014NV	700	500	250	Galleta (PLJA)
					Desert needlegrass (ACSP12)
					Banana yucca (YUBA)
					Anderson wolfberry (LYAN)
					Joshua tree (YUBR)
					Buckhorn cholla (OPAC)
					Mojave yucca (YUSC2)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
3420:					
Highland, moist---------	Shallow Gravelly Loam 7-9" p.z.; R030XB014NV	700	500	250	Galleta (PLJA)---------------
					Desert needlegrass (ACSP12)--
					Mojave yucca (YUSC2)---------
					Buckhorn cholla (OPAC)-------
					Creosote bush (LATR2)--------
					Mexican bladdersage (SAME)---
					Bush encelia (ENFR)----------
Straycow----------------	Volcanic Slope 7-9" p.z.; R030XB071NV	700	500	300	Big galleta (PLRI3)----------
					Desert needlegrass (ACSP12)--
					Bush muhly (MUPO2)-----------
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)-
					Mojave buckwheat (ERFAP)-----
					Ephedra (EPHED)--------------
					Misc. shrubs (SSSS)----------
					Littleleaf ratany (KRER)-----
					Parish's goldeneye (VIPA14)--
Hoppswell---------------	Shallow Gravelly Loam 7-9" p.z.; R030XB014NV	700	500	250	Black grama (BOER4)----------
					Indian ricegrass (ACHY)------
					Big galleta (PLRI3)----------
					Desert needlegrass (ACSP12)--
					Galleta (PLJA)---------------
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)-
					Blackbrush (CORA)------------
					Misc. shrubs (SSSS)----------
					Nevada jointfir (EPNE)-------
Arizo, cool-------------	Upland Wash; R030XB051NV	600	400	200	Big galleta (PLRI3)----------
					Bush muhly (MUPO2)-----------
					Misc. perennial grasses (PPGG
					Desert needlegrass (ACSP12)--
					Misc. perennial forbs (PPFF)-
					Hollyleaf bursage (AMER)-----
					Misc. shrubs (SSSS)----------
					Burrobrush (HYMEN3)----------
					Anderson's wolfberry (LYAN)--
					Mojave buckwheat (ERFAP)-----
					Littleleaf ratany (KRER)-----
					Apacheplume (FAPA)-----------
					Mexican bladdersage (SAME)---
					Desert almond (PRFA)---------
					Fourwing saltbush (ATCA2)----

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
3420:					
Lemitar	Shallow Gravelly Slope 7-9” p.z.; R030XB015NV	400	250	150	Big galleta (PLRI3)
					Cheatgrass (BRTE)
					Desert needlegrass (ACSP12)
					Snakeweed (GUTIE)
					Banana yucca (YUBA)
					Buckhorn cholla (OPAC)
					Littleleaf ratany (KRER)
3520:					
Arizo loamy sand	Limy 5-7” p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)
					Creosote bush (LATR2)
					White ratany (KRGR)
					Nevada jointfir (EPNE)
					Big galleta (PLRI3)
Arizo, dry	Limy 5-7" p.z. (low production); R030XB156CA	200	150	100	White bursage (AMDU2)
					Creosote bush (LATR2)
					Mojave yucca (YUSC2)
					White ratany (KRGR)
Arizo, frequently flooded	Broad Gravelly Wash; R030XB159CA	550	400	250	Virgin River encelia (ENVI)
					Catclaw acacia (ACGR)
					Burrobrush (HYSA)
					Anderson wolfberry (LYAN)
Daisy	Limy 5-7” p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)
					Creosote bush (LATR2)
					White ratany (KRGR)
					Big galleta (PLRI3)
					Nevada jointfir (EPNE)
Durinodic Calciargids	Limy 5-7” p.z.; R030XB005NV	600	400	250	White bursage (AMDU2)
					Creosote bush (LATR2)
					White ratany (KRGR)
					Big galleta (PLRI3)
					Nevada jointfir (EPNE)
Typic Argidurids	Limy 5-7” p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)
					Creosote bush (LATR2)
					White ratany (KRGR)
					Big galleta (PLRI3)
					Nevada jointfir (EPNE)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation
		Favorable year	Normal year	Unfavorable year	
		Lb/acre	*Lb/acre*	*Lb/acre*	
3640:					
Tonopah	Limy 5-7″ p.z.; R030XB005NV	500	300	200	Big galleta (PLRI3)
					Misc. perennial grasses (PPGG
					Misc. annual forbs (AAFF)
					Misc. perennial forbs (PPFF)
					White bursage (AMDU2)
					Creosotebush (LATR2)
					Misc. shrubs (SSSS)
					Littleleaf ratany (KRER)
					Nevada ephedra (EPNE)
Arizo	Limy 5-7″ p.z.; R030XB005NV	500	300	200	Big galleta (PLRI3)
					Misc. perennial grasses (PPGG
					Misc. annual forbs (AAFF)
					Misc. perennial forbs (PPFF)
					White bursage (AMDU2)
					Creosotebush (LATR2)
					Misc. shrubs (SSSS)
					Littleleaf ratany (KRER)
					Nevada ephedra (EPNE)
Typic Haplodurids	Limy 5-7″ p.z.; R030XB005NV	500	300	200	Big galleta (PLRI3)
					Misc. perennial grasses (PPGG
					Misc. annual forbs (AAFF)
					Misc. perennial forbs (PPFF)
					White bursage (AMDU2)
					Creosotebush (LATR2)
					Misc. shrubs (SSSS)
					Littleleaf ratany (KRER)
					Nevada ephedra (EPNE)
Arizo	Valley Wash; R030XB028NV	500	350	200	Big galleta (PLRI3)
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)
					Creosote bush (LATR2)
					Bursage (AMBRO)
					Baccharis (BACCH)
					Misc. shrubs (SSSS)
					Burrobrush (HYSA)
					Mojave buckwheat (ERFAP)
					Nevada jointfir (EPNE)
					Catclaw (ACGR)
					Desertwillow (CHLI2)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Total dry-weight production: Normal year	Total dry-weight production: Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
3640:					
Typic Torriorthents-----	Limy 5-7″ p.z.; R030XB005NV	500	300	200	Big galleta (PLRI3)
					Misc. perennial grasses (PPG
					Misc. annual forbs (AAFF)
					Misc. perennial forbs (PPFF)
					White bursage (AMDU2)
					Creosotebush (LATR2)
					Misc. shrubs (SSSS)
					Littleleaf ratany (KRER)
					Nevada ephedra (EPNE)
3641:					
Tonopah, rarely flooded-	Claypan 5-7″ p.z.; R030XB043NV	1,000	700	450	Big galleta (PLRI3)
					Creosote bush (LATR2)
					White bursage (AMDU2)
					Joshua tree (YUBR)
					Winterfat (KRLA2)
Arizo, steep-----------	Limy 5-7″ p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)
					Creosote bush (LATR2)
					Littleleaf ratany (KRER)
					Big galleta (PLRI3)
					Nevada jointfir (EPNE)
Arizo, frequently flooded---------------	Sandy Wash; R030XB163CA	600	400	200	Purple sage (SADOI)
					Catclaw acacia (ACGR)
					Stansbury cliffrose (PUST)
					Desert almond (PRFA)
					Burrobrush (HYSA)
Owlshead---------------	Shallow Granitic Loam 5-7″ p.z.; R030XB143CA	600	400	250	Blackbrush (CORA)
					Creosote bush (LATR2)
					Desert needlegrass (ACSP12)
					Nevada jointfir (EPNE)
					California buckwheat (ERFA2)
Arizo, very rarely flooded---------------	Limy 5-7″ p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)
					Creosote bush (LATR2)
					Littleleaf ratany (KRER)
					Big galleta (PLRI3)
					Nevada jointfir (EPNE)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Total dry-weight production: Normal year	Total dry-weight production: Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
3641:					
Tonopah	Claypan 5-7″ p.z.; R030XB043NV	1,000	700	450	Big galleta (PLRI3) Bush muhly (MUPO2) Creosote bush (LATR2) Spiny hopsage (GRSP) Winterfat (KRLA2) White bursage (AMDU2)
3650:					
Weiser, rarely flooded	Limy 5-7″ p.z.; R030XB005NV	500	300	200	White bursage (AMDU2) Creosote bush (LATR2) Littleleaf ratany (KRER) Big galleta (PLRI3) Nevada jointfir (EPNE)
Weiser	Gravelly Loam 3-5" p.z.; R030XB124CA	350	250	100	White bursage (AMDU2) Shadscale (ATCO) Creosote bush (LATR2) Big galleta (PLRI3) Littleleaf ratany (KRER)
Sodic Haplocalcids	Outwash Plain; R030XY046NV	400	300	150	Cattle saltbush (ATPO) White bursage (AMDU2) Creosote bush (LATR2) Indian ricegrass (ACHY)
Colosseum, occasionally flooded	Broad Gravelly Wash; R030XB159CA	550	400	250	Virgin River encelia (ENVI) Catclaw acacia (ACGR) Burrobrush (HYSA) Anderson wolfberry (LYAN)
Colosseum, very rarely flooded	Limy 5-7″ p.z.; R030XB005NV	500	300	200	White bursage (AMDU2) Creosote bush (LATR2) Littleleaf ratany (KRER) Big galleta (PLRI3) Nevada jointfir (EPNE)
3660:					
Colosseum, rarely flooded	Limy 5-7" p.z. (low production); R030XB156CA	200	150	100	White bursage (AMDU2) Creosote bush (LATR2) White ratany (KRGR) Schott's yucca (YUSC)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
3660:					
Colosseum, very rarely flooded	Limy 3-5" p.z.; R030XB019NV	200	125	75	Creosote bush (LATR2)
					White bursage (AMDU2)
					White ratany (KRGR)
					Schott's yucca (YUSC)
Weiser, cool	Shallow Limy 5-7" p.z.; R030XB031NV	300	250	150	White bursage (AMDU2)
					Shadscale (ATCO)
					Creosote bush (LATR2)
					Spiny menodora (MESP2)
Colosseum, occasionally flooded	Broad Gravelly Wash; R030XB159CA	500	350	200	Virgin River encelia (ENVI)
					Catclaw acacia (ACGR)
					Burrobrush (HYSA)
					Anderson wolfberry (LYAN)
Sodic Haplocalcids	Outwash Plain; R030XY046NV	400	300	150	Cattle saltbush (ATPO)
					White bursage (AMDU2)
					Creosote bush (LATR2)
					Indian ricegrass (ACHY)
Weiser	Gravelly Inset Fan 5-7" p.z.; R030XB133NV	200	150	100	White bursage (AMDU2)
					Fremont's dalea (PSFR)
					Nevada jointfir (EPNE)
					Mojave yucca (YUSC2)
					Creosote bush (LATR2)
4122:					
Popups	Shallow Granitic Loam 5-7" p.z.; R030XB143CA	600	400	250	Blackbrush (CORA)
					Creosote bush (LATR2)
					Desert needlegrass (ACSP12)
					Nevada jointfir (EPNE)
					California buckwheat (ERFA2)
Arizo	Gravelly Inset Fan 5-7" p.z.; R030XB157CA	450	350	200	Spiny menodora (MESP2)
					Creosote bush (LATR2)
					White bursage (AMDU2)
					Turpentinebroom (THMO)
					Littleleaf ratany (KRER)
Typic Haplargids	Shallow Granitic Loam 5-7" p.z.; R030XB143CA	500	350	250	Blackbrush (CORA)
					Big galleta (PLRI3)
					Misc. shrubs (SSSS)
					Creosote bush (LATR2)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
4122:					
Arizo, occasionaly flooded	Broad Gravelly Wash; R030XB159CA	550	400	250	Virgin River encelia (ENVI)
					Catclaw acacia (ACGR)
					Burrobrush (HYSA)
					Anderson wolfberry (LYAN)
Durinodic Haplargids	Limy 5-7" p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)
					Creosote bush (LATR2)
					White ratany (KRGR)
					Big galleta (PLRI3)
					Nevada jointfir (EPNE)
4180:					
Peskah	Gravelly Claypan 5-7" p.z.; R030XB100NV	1,000	700	450	Big galleta (PLRI3)
					Misc. perennial grasses (PPGG
					Bush muhly (MUPO2)
					Desert globemallow (SPAM2)
					Misc. perennial forbs (PPFF)
					White bursage (AMDU2)
					Misc. shrubs (SSSS)
					Littleleaf ratany (KRER)
					Nevada jointfir (EPNE)
Arizo	Limy 5-7" p.z.; R030XB005NV	500	300	200	Big galleta (PLRI3)
					Misc. perennial grasses (PPGG
					Misc. annual forbs (AAFF)
					Misc. perennial forbs (PPFF)
					White bursage (AMDU2)
					Creosotebush (LATR2)
					Misc. shrubs (SSSS)
					Littleleaf ratany (KRER)
					Nevada ephedra (EPNE)
Arizo	Valley Wash; R030XB028NV	500	350	200	Big galleta (PLRI3)
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)
					Creosote bush (LATR2)
					Bursage (AMBRO)
					Baccharis (BACCH)
					Misc. shrubs (SSSS)
					Burrobrush (HYSA)
					Mojave buckwheat (ERFAP)
					Nevada jointfir (EPNE)
					Catclaw (ACGR)
					Desertwillow (CHLI2)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
4180:					
Typic Haplargids	Limy 5-7″ p.z.; R030XB005NV	500	300	200	Big galleta (PLRI3)
					Misc. perennial grasses (PPG
					Misc. annual forbs (AAFF)
					Misc. perennial forbs (PPFF)
					White bursage (AMDU2)
					Creosotebush (LATR2)
					Misc. shrubs (SSSS)
					Littleleaf ratany (KRER)
					Nevada ephedra (EPNE)
Hoppswell	Shallow Gravelly Loam 7-9″ p.z.; R030XB014NV	700	500	250	Black grama (BOER4)
					Indian ricegrass (ACHY)
					Big galleta (PLRI3)
					Desert needlegrass (ACSP12)
					Galleta (PLJA)
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)
					Misc. shrubs (SSSS)
					Nevada jointfir (EPNE)
4190:					
Weiser, cool	Ballena Summit; R030XB158CA	300	250	150	White bursage (AMDU2)
					Blackbrush (CORA)
					Shadscale (ATCO)
					Creosote bush (LATR2)
					Spiny menodora (MESP2)
Weiser, warm	Limy 5-7″ p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)
					Creosote bush (LATR2)
					White ratany (KRGR)
					Big galleta (PLRI3)
					Nevada jointfir (EPNE)
Colosseum, occasionally flooded	Broad Gravelly Wash; R030XB159CA	500	250	200	Virgin River encelia (ENVI)
					Catclaw acacia (ACGR)
					Burrobrush (HYSA)
					Anderson wolfberry (LYAN)
Weiser, steep	Ballena Summit; R030XB158CA	300	250	150	White bursage (AMDU2)
					Blackbrush (CORA)
					Shadscale (ATCO)
					Creosote bush (LATR2)
					Spiny menodora (MESP2)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Total dry-weight production: Normal year	Total dry-weight production: Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
4190:					
Typic Torriorthents-----	Limy 5-7″ p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)--------
					Creosote bush (LATR2)--------
					White ratany (KRGR)----------
					Big galleta (PLRI3)----------
					Spiny menodora (MESP2)-------
4200:					
Owlshead----------------	Shallow Granitic Loam 5-7″ p.z.; R030XB143CA	600	400	250	Blackbrush (CORA)------------
					Misc. shrubs (SSSS)----------
					Creosote bush (LATR2)--------
					White bursage (AMDU2)--------
					Joshua tree (YUBR)-----------
					Misc. perennial forbs (PPFF)-
Arizo, frequently flooded----------------	Sandy Wash; R030XB163CA	600	400	200	Purple sage (SADOI)----------
					Catclaw acacia (ACGR)--------
					Stansbury cliffrose (PUST)---
					Desert almond (PRFA)---------
					Burrobrush (HYSA)------------
Tonopah-----------------	Claypan 5-7″ p.z.; R030XB043NV	1,000	700	450	Big galleta (PLRI3)----------
					Bush muhly (MUPO2)-----------
					Creosote bush (LATR2)--------
					Spiny hopsage (GRSP)---------
					Winterfat (KRLA2)------------
					White bursage (AMDU2)--------
4210:					
Ustidur-----------------	Shallow Gravelly Slope 7-9″ p.z.; R030XB015NV	400	250	150	Galleta (PLJA)---------------
					Black grama (BOER4)----------
					Desert needlegrass (ACSP12)--
					Littleleaf ratany (KRER)-----
					Creosote bush (LATR2)--------
					Mojave yucca (YUSC2)---------
					Joshua tree (YUBR)-----------
					Banana yucca (YUBA)----------
					Nevada jointfir (EPNE)-------

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
4210:					
Minehart	Shallow Gravelly Loam 7-9" p.z.; R030XB014NV	700	500	250	Galleta (PLJA)
					Bush muhly (MUPO2)
					Black grama (BOER4)
					Cooper's goldenbush (ERCO23)
					Snakeweed (GUTIE)
					Spiny hopsage (GRSP)
					Banana yucca (YUBA)
					Buckhorn cholla (OPAC)
					Peach thorn (LYCO2)
					Winterfat (KRLA2)
Arizo, cool	Upland Wash; R030XB051NV	600	400	200	Big galleta (PLRI3)
					Bush muhly (MUPO2)
					Misc. perennial grasses (PPG
					Desert needlegrass (ACSP12)
					Misc. perennial forbs (PPFF)
					Hollyleaf bursage (AMER)
					Misc. shrubs (SSSS)
					Burrobrush (HYMEN3)
					Anderson's wolfberry (LYAN)
					Mojave buckwheat (ERFAP)
					Littleleaf ratany (KRER)
					Apacheplume (FAPA)
					Mexican bladdersage (SAME)
					Desert almond (PRFA)
					Fourwing saltbush (ATCA2)
Hartpeak	Shallow Gravelly Loam 7-9" p.z.; R030XB014NV	700	500	250	Galleta (PLJA)
					Desert needlegrass (ACSP12)
					Banana yucca (YUBA)
					Anderson wolfberry (LYAN)
					Mojave yucca (YUSC2)
					Buckhorn cholla (OPAC)
4220:					
Minehart	Shallow Gravelly Loam 7-9" p.z.; R030XB014NV	700	500	250	Galleta (PLJA)
					Bush muhly (MUPO2)
					Black grama (BOER4)
					Cooper's goldenbush (ERCO23)
					Snakeweed (GUTIE)
					Spiny hopsage (GRSP)
					Banana yucca (YUBA)
					Buckhorn cholla (OPAC)
					Peach thorn (LYCO2)
					Winterfat (KRLA2)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Total dry-weight production: Normal year	Total dry-weight production: Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
4220:					
Paleargids	Shallow Gravelly Loam 7-9" p.z.; R030XB014NV	700	500	250	Galleta (PLJA)
					Black grama (BOER4)
					Peach thorn (LYCO2)
					Cooper's goldenbush (ERCO23)
					Nevada jointfir (EPNE)
Ustidur	Shallow Gravelly Slope 7-9" p.z.; R030XB015NV	400	250	150	Galleta (PLJA)
					Black grama (BOER4)
					Desert needlegrass (ACSP12)
					Threeawn (ARIST)
					Mojave yucca (YUSC2)
					Joshua tree (YUBR)
					Banana yucca (YUBA)
					Littleleaf ratany (KRER)
					Mojave buckwheat (ERFAP)
					Nevada jointfir (EPNE)
Arizo, cool	Upland Wash; R030XB051NV	600	400	200	Big galleta (PLRI3)
					Bush muhly (MUPO2)
					Misc. perennial grasses (PPGG
					Desert needlegrass (ACSP12)
					Misc. perennial forbs (PPFF)
					Hollyleaf bursage (AMER)
					Misc. shrubs (SSSS)
					Burrobrush (HYMEN3)
					Anderson's wolfberry (LYAN)
					Mojave buckwheat (ERFAP)
					Littleleaf ratany (KRER)
					Apacheplume (FAPA)
					Mexican bladdersage (SAME)
					Desert almond (PRFA)
					Fourwing saltbush (ATCA2)
4230:					
Hoppswell	Shallow Gravelly Loam 7-9" p.z.; R030XB014NV	700	500	250	Black grama (BOER4)
					Indian ricegrass (ACHY)
					Big galleta (PLRI3)
					Desert needlegrass (ACSP12)
					Galleta (PLJA)
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)
					Misc. shrubs (SSSS)
					Nevada jointfir (EPNE)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
4230:					
Ustidur----------------	Shallow Gravelly Slope 7-9" p.z.; R030XB015NV	400	250	150	Big galleta (PLRI3)---------
					Black grama (BOER4)---------
					Desert needlegrass (ACSP12)-
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)-----------
					Misc. shrubs (SSSS)---------
					Mojave buckwheat (ERFAP)----
					Nevada jointfir (EPNE)------
Ustic Torriorthents-----	Gravelly Fan 7-9" p.z.; R030XB090NV	600	400	200	Black grama (BOER4)---------
					Desert needlegrass (ACSP12)-
					Big galleta (PLRI3)---------
					Misc. perennial grasses (PPG
					Bush muhly (MUPO2)----------
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)-----------
					Misc. shrubs (SSSS)---------
					Yucca (YUCCA)---------------
					Nevada jointfir (EPNE)------
					Buckhorn cholla (OPAC)------
					Burrobrush (HYSA)-----------
Typic Torriorthents-----	Shallow Gravelly Slope 7-9" p.z.; R030XB015NV	400	250	150	Big galleta (PLRI3)---------
					Black grama (BOER4)---------
					Desert needlegrass (ACSP12)-
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Blackbrush (CORA)-----------
					Misc. shrubs (SSSS)---------
					Mojave buckwheat (ERFAP)----
					Nevada jointfir (EPNE)------

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Total dry-weight production: Normal year	Total dry-weight production: Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
4230:					
Arizo	Upland Wash; R030XB051NV	600	400	200	Big galleta (PLRI3)
					Bush muhly (MUPO2)
					Misc. perennial grasses (PPGG
					Desert needlegrass (ACSP12)
					Misc. perennial forbs (PPFF)
					Hollyleaf bursage (AMER)
					Misc. shrubs (SSSS)
					Burrobrush (HYMEN3)
					Anderson's wolfberry (LYAN)
					Mojave buckwheat (ERFAP)
					Littleleaf ratany (KRER)
					Apacheplume (FAPA)
					Mexican bladdersage (SAME)
					Desert almond (PRFA)
					Fourwing saltbush (ATCA2)
Bluepoint	Outwash Plain; R030XB046NV	400	300	150	Cattle saltbush (ATPO)
					Creosote bush (LATR2)
					White bursage (AMDU2)
					Indian ricegrass (ACHY)
Typic Haplosalids	Alluvial Plain; R030XB047NV	500	400	250	Cattle saltbush (ATPO)
					Indian ricegrass (ACHY)
					Misc. shrubs (SSSS)
					Misc. perennial forbs (PPFF)
					Misc. perennial grasses (PPGG
4711:					
Bluepoint	Dunes 3-7" p.z.; R030XY045NV	900	600	400	Honey mesquite (PRGL2)
					Fourwing saltbush (ATCA2)
Petronodic Haplocalcids	Sodic Loam 3-5" p.z.; R030XB114NV	250	150	75	Shadscale (ATCO)
					Mojave seablite (SUMO)
					Alkali sacaton (SPAI)
					Pepperweed (LEPID)
Typic Haplocalcids, carbonatic	Shallow Silty; R030XY013NV	150	100	50	Shadscale (ATCO)
					Fourwing saltbush (ATCA2)
					Mojave seablite (SUMO)
					Alkali sacaton (SPAI)
Sodic Haplocalcids	Outwash Plain; R030XY046NV	400	300	150	Cattle saltbush (ATPO)
					White bursage (AMDU2)
					Creosote bush (LATR2)
					Indian ricegrass (ACHY)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
4711:					
Typic Torriorthents-----	Loamy Lakeplain 5-7" p.z.; R030XY163CA	3,000	2,600	2,000	Honey mesquite (PRGL2)------
					Big saltbush (ATLE)---------
					Rubber rabbitbrush (ERNA10)-
					Alkali sacaton (SPAI)-------
Haymont, hummocky-------	Loamy Bottom; R030XB020NV	2,500	1,500	800	Alkali sacaton (SPAI)-------
					Fourwing saltbush (ATCA2)---
					Honey mesquite (PRGL2)------
					Big galleta (PLRI3)---------
					Torrey's saltbush (ATTO)----
					Saltgrass (DISP)------------
Sodic Haplocalcids------	Silt Bottom; R030XY009NV	900	700	500	Fourwing saltbush (ATCA2)---
					Alkali sacaton (SPAI)-------
					Shadscale (ATCO)------------
					Honey mesquite (PRGL2)------
					Cattle saltbush (ATPO)------
4760:					
Hypoint, overblown------	Sandhill 3-5" p.z.; R030XB150CA	1,000	700	450	Big galleta (PLRI3)---------
					Creosote bush (LATR2)-------
					White bursage (AMDU2)-------
Pipeflat----------------	Granitic Loam 5-7″ p.z.; R030XB007NV	500	350	200	White bursage (AMDU2)-------
					Big galleta (PLRI3)---------
					Bush muhly (MUPO2)----------
					Misc. annual grasses (AAGG)-
					Misc. annual forbs (AAFF)---
Arizo-------------------	Limy 5-7″ p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)-------
					Creosote bush (LATR2)-------
					Littleleaf ratany (KRER)----
					Misc. annual forbs (AAFF)---
					Misc. annual grasses (AAGG)-
					Staghorn cholla (OPEC)------
Arizo, overblown--------	Granitic Loam 5-7″ p.z.; R030XB007NV	500	350	200	White bursage (AMDU2)-------
					Big galleta (PLRI3)---------
					Creosote bush (LATR2)-------
					Misc. annual grasses (AAGG)-
					Misc. annual forbs (AAFF)---

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Total dry-weight production: Normal year	Total dry-weight production: Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
4760:					
Typic Torriorthents, thick sandy surface	Granitic Loam 5-7" p.z.; R030XB007NV	500	350	200	Big galleta (PLRI3)
					White bursage (AMDU2)
					Cattle saltbush (ATPO)
					Fourwing saltbush (ATCA2)
Arizo, occasionally flooded	---	300	200	100	Catclaw acacia (ACGR)
					Honey mesquite (PRGL2)
					Burrobrush (HYSA)
					Creosote bush (LATR2)
Arizo, rarely flooded	Limy 5-7" p.z.; R030XB005NV	500	300	200	White bursage (AMDU2)
					Creosote bush (LATR2)
					White ratany (KRGR)
					Schott's yucca (YUSC)
4765:					
Typic Calcigypsids	Gypsic Lake 5-7" p.z.; R030XY161CA	300	200	100	Shadscale (ATCO)
					Mojave seablite (SUMO)
					Iodinebush (ALOC2)
Typic Haplosalids	Salty Lakeplain 5-7" p.z.; R030XY162CA	250	150	75	Mojave seablite (SUMO)
					Iodinebush (ALOC2)
					Fourwing saltbush (ATCA2)
Typic Torriorthents	Silt Bottom; R030XY009NV	900	700	500	Fourwing saltbush (ATCA2)
					Alkali sacaton (SPAI)
					Shadscale (ATCO)
					Honey mesquite (PRGL2)
					Cattle saltbush (ATPO)
Leptic Haplogypsids	Gypsic Terrace 5-7" p.z.; R030XY160CA	300	225	125	Shadscale (ATCO)
					Fourwing saltbush (ATCA2)
					Iodinebush (ALOC2)
					Mojave seablite (SUMO)
					Big saltbush (ATLE)
Leptic Haplogypsids, hummocky	Silt Bottom; R030XY009NV	900	700	500	Fourwing saltbush (ATCA2)
					Alkali sacaton (SPAI)
					Shadscale (ATCO)
					Honey mesquite (PRGL2)
					Cattle saltbush (ATPO)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
4770:					
Haymont	Coarse Silty 3-5" p.z.; R030XA096NV	400	300	100	Alkali sacaton (SPAI)
					Misc. perennial grasses (PPGC
					Misc. perennial forbs (PPFF)
					Fourwing saltbush (ATCA2)
					Shadscale (ATCO)
					Misc. shrubs (SSSS)
Haymont, moist	Silty Terrace 5-7" p.z.; R030XA011NV	700	500	350	Misc. perennial grasses (PPGC
					Misc. perennial forbs (PPFF)
					Torrey's saltbush (ATTO)
					Fourwing saltbush (ATCA2)
					Misc. shrubs (SSSS)
					Shadscale (ATCO)
Bluepoint	Dunes 3-7" p.z.; R030XY045NV	900	600	400	Indian ricegrass (ACHY)
					Misc. perennial grasses (PPGC
					Misc. perennial forbs (PPFF)
					Fourwing saltbush (ATCA2)
					Honey mesquite (PRJU)
					Screwbean mesquite (PRPU)
					Misc. shrubs (SSSS)
					Creosotebush (LADI2)
					White bursage (AMDU2)
Haymont	Silt Bottom; R030XY009NV	900	700	500	Alkali sacaton (SPAI)
					Misc. perennial grasses (PPGC
					Misc. perennial forbs (PPFF)
					Fourwing saltbush (ATCA2)
					Shadscale (ATCO)
					Honey mesquite (PRJU)
					Misc. shrubs (SSSS)
Haymont	Loamy Bottom; R030XB020NV	2,500	1,500	800	Alkali sacaton (SPAI)
					Big galleta (PLRI3)
					Inland saltgrass (DISP)
					Misc. perennial grasses (PPGC
					Misc. perennial forbs (PPFF)
					Fourwing saltbush (ATCA2)
					Mesquite (PROSO)
					Torrey's saltbush (ATTO)
					Misc. shrubs (SSSS)
					Rabbitbrush (CHRYS9)

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year	Characteristic vegetation
		Lb/acre	*Lb/acre*	*Lb/acre*	
4770:					
Typic Torriorthents, fine-silty-------------	Clay Terrace 3-5" p.z.; R030XA097NV	400	300	100	Alkali sacaton (SPAI)--------
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)-
					Shadscale (ATCO)------------
					Fourwing saltbush (ATCA2)----
					Misc. shrubs (SSSS)----------
Typic Torriorthents, coarse-loamy-----------	Alluvial Plain; R030XY047NV	500	400	250	Indian ricegrass (ACHY)------
					Misc. perennial grasses (PPGG
					Misc. perennial forbs (PPFF)-
					Cattle saltbush (ATPO)-------
					Misc. shrubs (SSSS)----------
4775:					
Petronodic Haplocalcids-	Sodic Loam 3-5" p.z.; R030XB114NV	250	150	75	Shadscale (ATCO)------------
					Mojave seablite (SUMO)-------
					Alkali sacaton (SPAI)--------
					Pepperweed (LEPID)-----------
Calcic Petrocalcids-----	Alluvial Flat; R030XY165CA	1,500	1,150	675	Honey mesquite (PRGL2)-------
					Shadscale (ATCO)------------
					Mojave seablite (SUMO)-------
					Alkali sacaton (SPAI)--------
Calcic Petrocalcids, mixed------------------	Gravelly Skirt; R030XY164CA	1,750	1,250	950	Honey mesquite (PRGL2)-------
					Alkali goldenbush (ISACA2)---
					Shadscale (ATCO)------------
					Mojave seablite (SUMO)-------
Calcic Haplosalids, gravelly surface-------	Sodic Loam 3-5" p.z.; R030XB114NV	250	150	75	Shadscale (ATCO)------------
					Mojave seablite (SUMO)-------
					Alkali sacaton (SPAI)--------
					Pepperweed (LEPID)-----------
Sodic Haplocalcids------	Outwash Plain; R030XY046NV	400	300	150	Cattle saltbush (ATPO)-------
					White bursage (AMDU2)--------
					Creosote bush (LATR2)--------
					Indian ricegrass (ACHY)------

Table 3.--Rangeland Ecological Sites, Productivity, and Characteristic Vegetation--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Total dry-weight production: Normal year	Total dry-weight production: Unfavorable year	Characteristic vegetation
		Lb/acre	Lb/acre	Lb/acre	
4775:					
Sodic Haplocalcids, rarely flooded	Silt Bottom; R030XY009NV	900	700	500	Fourwing saltbush (ATCA2)
					Alkali sacaton (SPAI)
					Shadscale (ATCO)
					Cattle saltbush (ATPO)
					Honey mesquite (PRGL2)
Hypoint	Alluvial Plain; R030XY047NV	500	400	250	Indian ricegrass (ACHY)
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Cattle saltbush (ATPO)
					Misc. shrubs (SSSS)
Tipnat	Alluvial Plain; R030XY047NV	500	400	250	Indian ricegrass (ACHY)
					Misc. perennial grasses (PPG
					Misc. perennial forbs (PPFF)
					Cattle saltbush (ATPO)
					Misc. shrubs (SSSS)
5000:					
Copperworld	Shallow Gravelly Loam 7-9" p.z.; R030XC007NV	600	450	300	Blackbrush (CORA)
					Arid needlegrass (ACAR14)
					Spiny hopsage (GRSP)
					Desert needlegrass (ACSP12)
					Fourwing saltbush (ATCA2)
Lithic Ustic Haplargids, cool	Juniperus Osteosperma-Pinus Monophylla/purshia Stansburiana-Coleogyne Ramosissima/bouteloua Gracilis-Poa Fendleriana; F030XC238NV	600	400	250	Utah juniper (JUOS)
					Desert needlegrass (ACSP12)
					Single-leaf pinyon (PIMO)
					Black grama (BOER4)
					Blackbrush (CORA)
5300:					
Lithic Ustic Haplocalcids	Juniperus Osteosperma-Pinus Monophylla/purshia Stansburiana-Coleogyne Ramosissima/bouteloua Gracilis-Poa Fendleriana; F030XC238NV	600	400	250	Utah juniper (JUOS)
					Desert needlegrass (ACSP12)
					Single-leaf pinyon (PIMO)
					Black grama (BOER4)
					Blackbrush (CORA)

Table 4.--Plant Symbols and Common and Scientific Plant Names

Local common name	Scientific name	Plant symbol
Alkali goldenbush	*Isocoma acradenia*	ISAC2
Alkali sacaton	*Sporobolus airoides*	SPAI
Anderson wolfberry	*Lycium andersonii*	LYAN
Apache plume	*Fallugia paradoxa*	FAPA
Arid needlegrass	*Achnatherum aridum*	ACAR14
Arizona honeysweet	*Tidestromia oblongifolia*	TIOB
Aster	*Aster* spp.	ASTER
Baccharis	*Baccharis*	BACCH
Banana yucca	*Yucca baccata*	YUBA
Basin wildrye	*Leymus cinereus*	LECI4
Beardtongue	*Penstemon* spp.	PENST
Beavertail pricklypear	*Opuntia basilaris*	OPBA2
Big galleta	*Pleuraphis rigida*	PLRI3
Big saltbush	*Atriplex lentiformis*	ATLE
Bigelow sage	*Artemisia bigelovii*	ARBI13
Black grama	Bouteloua eriopoda	BOER4
Blackbrush	*Coleogyne ramosissima*	CORA
Blue grama	*Bouteloua gracilis*	BOGR2
Branched pencil cholla	*Cylindropuntia ramosissima*	CYRA9
Bristly fiddleneck	*Amsinckia tessellata*	AMTE3
Brittle spineflower	*Chorizanthe brevicornu*	CHBR
Broom snakeweed	*Gutierrezia sarothrae*	GUSA2
Browneyed evening primrose	*Camissonia claviformis*	CACL4
Brownplume wirelettuce	*Stephanomeria pauciflora*	STPA4
Buckhorn cholla	*Cylindropuntia acanthocarpa*	CYAC8
Bud sagebrush	*Picrothamnus desertorum*	PIDE4
Burrobrush	*Hymenoclea salsola*	HYSA
Bush encelia	*Encelia frutescens*	ENFR
Bush muhly	*Muhlenbergia porteri*	MUPO2
California barrel cactus	*Ferocactus cylindraceus*	FECY
California buckwheat	*Eriogonum fasciculatum*	ERFA2
California ephedra	*Ephedra californica*	EPCA2
California rockflower	*Crossosoma californicum*	CRCA5
Catclaw acacia	*Acacia greggii*	ACGR
Cattle saltbush	*Atriplex polycarpa*	ATPO
Cheeseweed burrobrush	*Hymenoclea monogyra*	HYMO
Clark Mountain buckwheat	*Eriogonum heermannii* var. *floccosum*	ERHEF
Common fishhook cactus	*Mammillaria tetrancistra*	MATE4
Cooper's goldenbush	*Ericameria cooperi*	ERCO23
Cottontop cactus	*Echinocactus polycephalus*	ECPO2
Creosote bush	*Larrea tridentata*	LATR2
Cryptantha	*Cryptantha* spp.	CRYPT
Death Valley jointfir	*Ephedra funerea*	EPFU
Desert almond	*Prunus fasciculata*	PRFA
Desert bitterbrush	*Purshia glandulosa*	PUGL2
Desert calico	*Loeseliastrum matthewsii*	LOMA10
Desert dicoria	*Dicoria canescens*	DICA4
Desert globemallow	*Sphaeralcea ambigua*	SPAM2
Desert holly	*Atriplex hymenelytry*	ATHY
Desert Indianwheat	*Plantago ovata*	PLOV
Desert larkspur	*Delphinium parishii*	DEPA
Desert marigold	*Baileya multiradiata*	BAMU
Desert needlegrass	*Achnatherum speciosum*	ACSP12
Desert pepperweed	*Lepidium fremontii*	LEFR2
Desert princesplume	*Stanleya pinnata*	STPI
Desert sand verbena	*Abronia villosa*	ABVI
Desert tobacco	*Nicotiana obtusifolia*	NIOB
Desert trumpet	*Eriogonum inflatum*	ERIN4
Desert willow	*Chilopsis linearis*	CHLI2
Desertbroom	*Baccharis sarothroides*	BASA2
Desertsenna	*Senna armata*	SEAR8
Emory's baccharis	*Baccharis emoryi*	BAEM
Emory's dalea	*Psorothamnus emoryi*	PSEM
Engelmann's hedgehog cactus	*Echinocereus engelmannii*	ECEN
Fiveneedle pricklyleaf	*Thymophylla pentachaeta*	THPE4

Table 4.--Plant Symbols and Common and Scientific Plant Names--Continued

Local common name	Scientific name	Plant symbol
Flatcrown buckwheat	*Eriogonum deflexum*	ERDE6
Foothill deathcamas	*Zigadenus paniculatus*	ZIPA2
Fourwing saltbush	*Atriplex canescens*	ATCA2
Fremont's chaffbush	*Amphipappus fremontii*	AMFR2
Fremont's dalea	*Psorothamnus fremontii*	PSFR
Frostmat	*Achyronychia cooperi*	ACCO3
Golden cholla	*Cylindropuntia echinocarpa*	CYEC3
Goldenweed	*Pyrrocoma* spp.	PYRRO
Green ephedra	*Ephedra viridis*	EPVI
Hollyleaf bursage	*Ambrosia eriocentra*	AMER
Honey mesquite	*Prosopis glandulosa*	PRGL2
Indian paintbrush	*Castilleja* spp.	CASTE7
Indian ricegrass	*Achnatherum hymenoides*	ACHY
Iodinebush	*Allenrolfea occidentalis*	ALOC2
James' galleta	*Pleuraphis jamesii*	PLJA
Joshua tree	*Yucca brevifolia*	YUBR
Littleleaf ratany	*Krameria erecta*	KRER
Low woollygrass	*Dasyochloa pulchella*	DAPU7
Manybristle cinchweed	*Pectis papposa*	PEPA2
Mesquite mistletoe	*Phoradendron californicum*	PHCA8
Mexican bladdersage	*Salazaria mexicana*	SAME
Milkvetch	*Astragalus* spp.	ASTRA
Miscellaneous annual grasses	Unknown	2GA
Mojave buckwheat	*Eriogonum fasciculatum*	ERFAP
Mojave rabbitbrush	*Ericameria paniculata*	ERPA29
Mojave sage	*Salvia mohavensis*	SAMO3
Mojave seablite	*Suaeda moquinii*	SUMO
Mojave woodyaster	*Xylorhiza tortifolia*	XYTO2
Mojave yucca	*Yucca schidigera*	YUSC2
Mugwort	*Artemisia ludoviciana*	ARLU
Mustard	*Brassica* spp.	BRASS2
Muttongrass	*Poa fendleriana*	POFE
Nevada ephedra	*Ephedra nevadensis*	EPNE
Nevada jointfir	*Ephedra nevadensis*	EPNE
Palmer's crinklemat	*Tiquilia palmeri*	TIPA
Paperbag bush	*Salazaria mexicana*	SAME
Phacelia	*Phacelia spp.*	PHACE
Pincushion flower	*Chaenactis fremontii*	CHFR
Popcornflower	*Plagiobothrys* spp.	PLAGI
Purple sage	*Salvia dorrii*	SADO4
Purple threeawn	*Aristida purpurea*	ARPU9
Rayless goldenhead	*Acamptopappus sphaerocephalus*	ACSP
Rubber rabbitbrush	*Ericameria nauseosa*	ERNA10
Saltgrass	*Distichlis spicata*	DISP
Sand dropseed	*Sporobolus cryptandrus*	SPCR
Sandberg bluegrass	*Poa secunda*	POSE
Schott's pygmycedar	*Peucephyllum schottii*	PESC4
Schott's yucca	*Yucca × schottii*	YUSC
Screwbean mesquite	*Prosopis pubescens*	PRPU
Sedge	*Carex* spp.	CAREX
Shadscale	*Atriplex confertifolia*	ATCO
Shortspine horsebrush	*Tetradymia spinosa*	TESP2
Singleleaf pinyon	*Pinus monophylla*	PIMO
Sixweeks grama	*Bouteloua barbata*	BOBA2
Slender poreleaf	*Porophyllum gracile*	POGR5
Slim tridens	*Tridens muticus*	TRMU
Snakeweed	*Gutierrezia*	GUTIE
Spearleaf brickellia	*Brickellia arguta*	BRAR2
Spiny hopsage	*Grayia spinosa*	GRSP
Spiny menodora	*Menodora spinescens*	MESP2
Squirreltail	*Elymus elymoides* ssp. *elymoides*	ELELE
Staghorn cholla	*Opuntia echinocarpa*	OPEC
Stansbury cliffrose	*Purshia stansburiana*	PUST
Starry bedstraw	*Galium stellatum*	GAST
Sweetbush	*Bebbia juncea*	BEJU

Table 4.--Plant Symbols and Common and Scientific Plant Names--Continued

Local common name	Scientific name	Plant symbol
Teddybear cholla	*Cylindropuntia bigelovii*	CYBI9
Thurber's sandpaper plant	*Petalonyx thurberi*	PETH4
Toothleaf goldeneye	*Viguiera dentata*	VIDE3
Torrey's ephedra	*Ephedra torreyana*	EPTO
Torrey's saltbush	*Atriplex torreyi*	ATTO
Trailing allionia	*Allionia incarnata*	ALIN
Triangle evening primrose	*Oenothera deltoides*	OEDE2
Turpentinebroom	*Thamnosma montana*	THMO
Utah agave	*Agave utahensis*	AGUT
Utah butterflybush	*Buddleja utahensis*	BUUT
Utah juniper	*Juniperus osteosperma*	JUOS
Utah mortonia	*Mortonia utahensis*	MOUT
Virgin River brittlebush	*Encelia virginensis*	ENVI
Western honey mesquite	*Prosopis glandulosa* var. *torreyana*	PRGLT
White brittlebush	*Encelia farinosa*	ENFA
White bursage	*Ambrosia dumosa*	AMDU2
White ratany	*Krameria grayi*	KRGR
Whitemargin sandmat	*Chamaesyce albomarginata*	CHAL11
Whitestem paperflower	*Psilostrophe cooperi*	PSCO2
Winterfat	*Krascheninnikovia lanata*	KRLA2
Wishbone-bush	*Mirabilis laevis* var. *villosa*	MILAV
Woody crinklemat	*Tiquilia canescens*	TICA3
Woolly bluestar	*Amsonia tomentosa*	AMTO2
Woolly brickellbush	*Brickellia incana*	BRIN
Woolly marigold	*Baileya pleniradiata*	BAPL3

Table 5.--Burrowing Habitat for Desert Tortoise

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. The information indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The rating is based on the limitation with the highest value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions and coarse fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Suitability class and limiting feature	Value
3000:			
Copperworld	65	Poorly suited	
		Depth to bedrock <10"	1.00
Copperworld, cool	15	Poorly suited	
		Depth to bedrock <10"	1.00
3241:			
Langwell	85	Poorly suited	
		Depth to bedrock <10"	1.00
		Fragments (0.2-3") 50-75% in 0-30"	0.84
		COSL, LS, LFS, or LVFS in 0-30"	0.50
3260:			
Straycow	40	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		SICL, CL, SCL in 0-30"	0.50
		Depth to bedrock 10-20"	0.08
Newera	35	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Depth to bedrock 10-20"	0.80
		SICL, CL, SCL in 0-30"	0.50
Rubble land	10	Not rated	
3261:			
Straycow	45	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Depth to bedrock <10"	1.00
		SICL, CL, SCL in 0-30"	0.50
Highland	25	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Fragments (>3") 10 to 25%	0.11
Straycow, moderately sloping	15	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		SICL, CL, SCL in 0-30"	0.50
		Depth to bedrock 10-20"	0.08
3310:			
Birdspring	50	Poorly suited	
		Depth to bedrock <10"	1.00
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Fragments (>3") 10 to 25%	0.09

Table 5.--Burrowing Habitat for Desert Tortoise--Continued

Map symbol and soil name	Pct. of map unit	Suitability class and limiting feature	Value
3310:			
Zeheme	25	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Fragments (>3") >25%	1.00
		Depth to bedrock 10-20"	0.68
Rock outcrop	15	Not rated	
3320:			
Umberci	65	Poorly suited	
		Depth to bedrock <10"	1.00
		Fragments (0.2-3") > 75% in 0-30"	1.00
Rock outcrop	20	Not rated	
3412:			
Haleburu	60	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Depth to bedrock 10-20"	0.88
		Fragments (>3") 10 to 25%	0.14
Haleburu, dry	25	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Depth to bedrock 10-20"	0.88
		Fragments (>3") 10 to 25%	0.14
3420:			
Hartpeak	50	Poorly suited	
		Fragments (>3") >25%	1.00
		Fragments (0.2-3") > 75% in 0-30"	1.00
		SICL, CL, SCL in 0-30"	0.50
Highland, moist	35	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
3520:			
Arizo loamy sand	85	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
		Fragments (0.2-3") 50-75% in 0-30"	0.99
3640:			
Tonopah	45	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
		Fragments (0.2-3") > 75% in 0-30"	1.00
Arizo	40	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
		Fragments (0.2-3") > 75% in 0-30"	1.00
3641:			
Tonopah, rarely flooded	80	Suited	
		COSL, LS, LFS, or LVFS in 0-30"	0.50
		Rare flooding	0.50
3650:			
Weiser, rarely flooded	45	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Rare flooding	0.50
Weiser	40	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Fragments (>3") 10 to 25%	0.86

Table 5.--Burrowing Habitat for Desert Tortoise--Continued

Map symbol and soil name	Pct. of map unit	Suitability class and limiting feature	Value
3660:			
Colosseum, rarely flooded	65	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		COSL, LS, LFS, or LVFS in 0-30"	0.50
		Rare flooding	0.50
Colosseum, very rarely flooded	20	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		COSL, LS, LFS, or LVFS in 0-30"	0.50
4122:			
Popups	75	Suited	
		Fragments (0.2-3") 50-75% in 0-30"	0.80
4180:			
Peskah	50	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
		Fragments (0.2-3") > 75% in 0-30"	1.00
Arizo	35	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Fragments (>3") 10 to 25%	0.88
4190:			
Weiser, cool	85	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Fragments (>3") 10 to 25%	0.10
4200:			
Owlshead	95	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Depth to pan 10-20"	0.67
4210:			
Ustidur	85	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Depth to pan 10-20"	0.94
4220:			
Minehart	85	Suited	
		Fragments (0.2-3") 50-75% in 0-30"	0.08
4230:			
Hoppswell	55	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
		Fragments (0.2-3") > 75% in 0-30"	1.00
Ustidur	30	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Depth to pan < 10"	1.00
4703:			
Typic Haplosalids, ponded	85	Poorly suited	
		Ponded (any duration)	1.00

Table 5.--Burrowing Habitat for Desert Tortoise--Continued

Map symbol and soil name	Pct. of map unit	Suitability class and limiting feature	Value
4711:			
Bluepoint	55	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
Petronodic Haplocalcids	25	Suited	
		SICL, CL, SCL in 0-30"	0.50
		Fragments (0.2-3") 50-75% in 0-30"	0.12
4760:			
Hypoint, overblown	45	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
Pipeflat	35	Suited	
		COSL, LS, LFS, or LVFS in 0-30"	0.50
4765:			
Typic Calcigypsids	55	Poorly suited	
		Gypsum >15% in 0 to 10"	1.00
Typic Haplosalids, ponded	25	Poorly suited	
		Ponded (any duration)	1.00
4770:			
Haymont	40	Suited	
		Rare flooding	0.50
Haymont, moist	30	Suited	
		Rare flooding	0.50
Bluepoint	20	Poorly suited	
		COS, S, FS, VFS, or LCOS in 0-30"	1.00
4775:			
Petronodic Haplocalcids	45	Poorly suited	
		Ponded (any duration)	1.00
		SICL, CL, SCL in 0-30"	0.50
		Fragments (0.2-3") 50-75% in 0-30"	0.12
Calcic Petrocalcids	40	Poorly suited	
		Ponded (any duration)	1.00
		Fragments (0.2-3") 50-75% in 0-30"	0.97
4820:			
Playa	90	Not rated	
5000:			
Copperworld	70	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Depth to bedrock <10"	1.00
		SICL, CL, SCL in 0-30"	0.50
Lithic Ustic Haplargids, cool	25	Suited	
		Depth to bedrock 10-20"	0.48
		Fragments (0.2-3") 50-75% in 0-30"	0.01
5300:			
Lithic Ustic Haplocalcids	90	Poorly suited	
		Fragments (0.2-3") > 75% in 0-30"	1.00
		Fragments (>3") 10 to 25%	0.81
		Depth to bedrock 10-20"	0.52

Table 5.--Burrowing Habitat for Desert Tortoise--Continued

Map symbol and soil name	Pct. of map unit	Suitability class and limiting feature	Value
NOTCOM:			
Soils data not complete	100	Not rated	

Textures are abbreviated as: C--clay, CL--clay loam, COS--coarse sand, COSL--coarse sandy loam, FS--fine sand, FSL--fine sandy loam, L--loam, LCOS--loamy coarse sand, LFS--loamy fine sand, LS--loamy sand, LVFS--loamy very fine sand, S--sand, SC--sandy clay, SCL--sandy clay loam, SI--silt, SIC--silty clay, SICL--silty clay loam, SIL--silt loam, SL--sandy loam, VFS--very fine sand, and VFSL--very fine sandy loam.

The interpretation for desert tortoise habitat evaluates the following soil properties at varying depths in the soil: flooding, ponding, wetness, slope, content of clay and sand, content of organic matter, fragments greater than 3 inches in size, depth to bedrock, depth to a cemented pan, bulk density, content of gypsum, and fragments 0.2 to 3 inches in size.

Table 6a.--Recreation (Part 1)

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. The informa
the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value co
0.01 to 1.00. The larger the value, the greater the potential limitation. The rating is based on the limitation w
value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions a
fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in
limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Camp Areas		Picnic Areas		Playgro
		Limitation	Value	Limitation	Value	Limitation
3000:						
Copperworld---------	65	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Fragments >10" >
Copperworld, cool---	15	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Fragments >10" >
3241:						
Langwell------------	85	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Fragments >10" >
3260:						
Straycow------------	40	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Fragments > 3" >
		Dusty	0.50	Dusty	0.50	Surface fragments >25%
Newera--------------	35	Limitations		Limitations		Limitations
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Fragments > 3" >
		Dusty	0.50	Dusty	0.50	Bedrock depth < 2
		Fragments >3" 25 to 75%	0.18	Fragments >3" 25 to 75%	0.18	Surface fragments >25%
Rubble land---------	10	Not rated		Not rated		Not rated
3261:						
Straycow------------	45	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Fragments (<3") > 50%	1.00	Fragments (<3") > 50%	1.00	Surface fragments >25%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth < 2

Table 6a.--Recreation (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp Areas: Limitation	Camp Areas: Value	Picnic Areas: Limitation	Picnic Areas: Value	Playgr[ounds]: Limitatio[n]
3261:						
Highland-----------	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Fragments (<3") > 50%	1.00	Fragments (<3") > 50%	1.00	Surface fragment
		Fragments >10" .1 to 3%	0.76	Fragments >10" .1 to 3%	0.76	>25%
						Fragments > 3" >
Straycow, moderately sloping-----------	15	Limitations		Limitations		Limitations
		Fragments (<3") > 50%	1.00	Fragments (<3") > 50%	1.00	Slopes > 6%
		Slopes > 15%	1.00	Slopes > 15%	1.00	Surface fragment
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	>25%
						Bedrock depth <
3310:						
Birdspring---------	50	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Fragments > 3" >
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Bedrock depth <
Zeheme-------------	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Fragments > 3" >
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Bedrock depth <
Rock outcrop--------	15	Not rated		Not rated		Not rated
3320:						
Umberci------------	65	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth <
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Surface fragment
						>25%
Rock outcrop--------	20	Not rated		Not rated		Not rated
3412:						
Haleburu-----------	60	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Fragments (<3") > 50%	1.00	Fragments (<3") > 50%	1.00	Surface fragment
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	>25%
						Bedrock depth <

Table 6a.--Recreation (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp Areas: Limitation	Camp Areas: Value	Picnic Areas: Limitation	Picnic Areas: Value	Playgro[unds]: Limitation
3412:						
Haleburu, dry-------	25	Limitations		Limitations		Limitations
		Fragments (<3") > 50%	1.00	Fragments (<3") > 50%	1.00	Surface fragments >25%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Slopes > 6%
3420:						
Hartpeak------------	50	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Fragments > 3" >
		Fragments (<3") 25-50%	0.72	Fragments (<3") 25-50%	0.72	Surface fragments >25%
Highland, moist-----	35	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Fragments (<3") > 50%	1.00	Fragments (<3") > 50%	1.00	Surface fragments >25%
		Fragments >10" .1 to 3%	0.76	Fragments >10" .1 to 3%	0.76	Fragments > 3" >
3520:						
Arizo, loamy sand---	85	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fractions 70 - 90% by wt.	0.88	Surface sand frac 90% by wt.
						Slopes 2 to 6%
3640:						
Tonopah-------------	45	Limitations		Limitations		Limitations
		Fragments (<3") > 50%	1.00	Fragments (<3") > 50%	1.00	Surface fragments >25%
						Slopes 2 to 6%
Arizo---------------	40	Limitations		Limitations		Limitations
		Fragments (<3") > 50%	1.00	Fragments (<3") > 50%	1.00	Surface fragments >25%
		Surface sand fractions 70 - 90% by wt.	0.36	Surface sand fractions 70 - 90% by wt.	0.36	Slopes 2 to 6%
						Surface sand frac 90% by wt.
3641:						
Tonopah, rarely flooded-----------	80	Limitations		No limitations		Limitations
		Flooding ≥ rare	1.00			Slopes 2 to 6%
						Surface fragments 25%

Table 6a.--Recreation (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp Areas: Limitation	Camp Areas: Value	Picnic Areas: Limitation	Picnic Areas: Value	Playgr[ounds]: Limitatio[n]
3650:						
Weiser, rarely flooded-----------	45	Limitations Flooding ≥ rare Fragments (<3") > 50%	 1.00 1.00	Limitations Fragments (<3") > 50%	 1.00	Limitations Surface fragment >25% Slopes 2 to 6%
Weiser-------------	40	Limitations Dusty	 0.50	Limitations Dusty	 0.50	Limitations Surface fragment 25% Dusty Slopes 2 to 6%
3660:						
Colosseum, rarely flooded-----------	65	Limitations Flooding ≥ rare Surface sand fractions 70 - 90% by wt.	 1.00 0.32	Limitations Surface sand fractions 70 - 90% by wt.	 0.32	Limitations Surface fragment 25% Surface sand fra 90% by wt. Slopes 2 to 6%
Colosseum, very rarely flooded-----	20	Limitations Fragments (<3") 25-50% Surface sand fractions 70 - 90% by wt.	 0.84 0.41	Limitations Fragments (<3") 25-50% Surface sand fractions 70 - 90% by wt.	 0.84 0.41	Limitations Surface fragment >25% Slopes 2 to 6% Surface sand fra 90% by wt.
4122:						
Popups-------------	75	Limitations Depth to pan between 20 and 40"	 0.01	Limitations Depth to pan between 20 and 40"	 0.01	Limitations Slopes 2 to 6% Surface fragment 25%
4180:						
Peskah-------------	50	Limitations Fragments (<3") > 50% Fragments >10" >3% Surface sand fractions 70 - 90% by wt.	 1.00 1.00 0.01	Limitations Fragments (<3") > 50% Fragments >10" >3% Surface sand fractions 70 - 90% by wt.	 1.00 1.00 0.01	Limitations Surface fragment >25% Fragments >10" Slopes 2 to 6%

Table 6a.--Recreation (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp Areas Limitation	Camp Areas Value	Picnic Areas Limitation	Picnic Areas Value	Playgro[unds] Limitation
4180: Arizo--------------	35	Limitations Fragments (<3") > 50% Fragments >10" .1 to 3%	 1.00 0.19	Limitations Fragments (<3") > 50% Fragments >10" .1 to 3%	 1.00 0.19	Limitations Surface fragments >25% Slopes 2 to 6% Fragments >10" .1
4190: Weiser, cool--------	85	No limitations		No limitations		Limitations Slopes 2 to 6% Surface fragments 25%
4200: Owlshead-----------	95	Limitations Depth to pan ≤ 20″ Dusty	 1.00 0.50	Limitations Depth to pan ≤ 20″ Dusty	 1.00 0.50	Limitations Slopes 2 to 6% Dusty Surface fragments 25%
4210: Ustidur------------	85	Limitations Fragments (<3") > 50% Depth to pan ≤ 20″ Slopes > 15%	 1.00 1.00 1.00	Limitations Fragments (<3") > 50% Depth to pan ≤ 20″ Slopes > 15%	 1.00 1.00 1.00	Limitations Slopes > 6% Surface fragments >25% Fragments >10" .1
4220: Minehart-----------	85	Limitations Permeability is .06-.6"/hr Fragments >10" .1 to 3%	 0.50 0.19	Limitations Permeability is .06-.6"/hr Fragments >10" .1 to 3%	 0.50 0.19	Limitations Surface fragments >25% Slopes 2 to 6% Permeability is .
4230: Hoppswell----------	55	Limitations Fragments (<3") > 50% Fragments >10" >3%	 1.00 1.00	Limitations Fragments (<3") > 50% Fragments >10" >3%	 1.00 1.00	Limitations Surface fragments >25% Fragments >10" > Slopes 2 to 6%
Ustidur------------	30	Limitations Fragments (<3") > 50% Depth to pan ≤ 20″ Slopes > 15%	 1.00 1.00 1.00	Limitations Fragments (<3") > 50% Depth to pan ≤ 20″ Slopes > 15%	 1.00 1.00 1.00	Limitations Slopes > 6% Surface fragments >25% Fragments >10" .1

Table 6a.--Recreation (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp Areas: Limitation	Camp Areas: Value	Picnic Areas: Limitation	Picnic Areas: Value	Playgro: Limitation
4703:						
Typic Haplosalids, ponded------------	85	Limitations		Limitations		Limitations
		SAR > 12	1.00	Surface SAR >13	1.00	Surface SAR >13
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any dura
		Permeability < .06"/hr	0.99	Permeability < .06"/hr	0.99	Permeability < .
4711:						
Bluepoint----------	55	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.98	Surface sand fractions 70 - 90% by wt.	0.98	Slopes > 6%
		Slopes 8 to 15%	0.37	Slopes 8 to 15%	0.37	Surface sand fra 90% by wt.
Petronodic Haplocalcids-------	25	Limitations		Limitations		Limitations
		SAR > 12	1.00	Permeability is .06-.6"/hr	0.50	Permeability is
		Permeability is .06-.6"/hr	0.50	Surface sand fractions 70 - 90% by wt.	0.12	Surface sand fra 90% by wt.
		Surface sand fractions 70 - 90% by wt.	0.12			
4760:						
Hypoint, overblown--	45	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fra 90% by wt.
						Slopes 2 to 6%
Pipeflat-----------	35	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fra 90% by wt.
						Slopes 2 to 6%
4765:						
Typic Calcigypsids--	55	Limitations		Limitations		Limitations
		Surface EC 4 to 6 mmhos/cm	0.01	Surface EC 4-8 mmhos/cm	0.01	Surface EC 4-8 m
Typic Haplosalids, ponded------------	25	Limitations		Limitations		Limitations
		Surface EC > 8 mmhos/cm	1.00	Surface EC > 8 mmhos/cm	1.00	Surface EC > 8 m
		SAR > 12	1.00	Surface SAR >13	1.00	Surface SAR >13
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any dura
4770:						
Haymont------------	40	Limitations		Limitations		Limitations
		Surface EC > 8 mmhos/cm	1.00	Surface EC > 8 mmhos/cm	1.00	Surface EC > 8 m
		Flooding ≥ rare	1.00	Surface SAR >13	1.00	Surface SAR >13
		SAR > 12	1.00	Dusty	0.50	Dusty

Table 6a.--Recreation (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp Areas		Picnic Areas		Playgro[unds]
		Limitation	Value	Limitation	Value	Limitation
4770:						
Haymont, moist------	30	Limitations		Limitations		Limitations
		Surface EC > 8 mmhos/cm	1.00	Surface EC > 8 mmhos/cm	1.00	Surface EC > 8 mm
		Flooding ≥ rare	1.00	Surface SAR >13	1.00	Surface SAR >13
		SAR > 12	1.00	Dusty	0.50	Dusty
Bluepoint-----------	20	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Surface sand fractions 70 - 90% by wt.	0.98	Surface sand fractions 70 - 90% by wt.	0.98	Surface sand frac 90% by wt.
4775:						
Petronodic Haplocalcids-------	45	Limitations		Limitations		Limitations
		SAR > 12	1.00	Ponded (any duration)	1.00	Ponded (any durat
		Ponded (any duration)	1.00	Dusty	0.50	Dusty
		Dusty	0.50	Permeability is .06-.6"/hr	0.50	Permeability is .
Calcic Petrocalcids-	40	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any durat
		SAR > 12	1.00	Depth to pan between 20 and 40"	0.61	Surface sand frac 90% by wt.
		Depth to pan between 20 and 40"	0.61	Surface sand fractions 70 - 90% by wt.	0.12	
4820:						
Playa---------------	90	Not rated		Not rated		Not rated
5000:						
Copperworld---------	70	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Fragments >10" >3%	1.00	Fragments >10" >
Lithic Ustic Haplargids, cool---	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth < 2
		Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fractions 70 - 90% by wt.	0.88	Surface sand frac 90% by wt.

Table 6a.--Recreation (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp Areas		Picnic Areas		Playgr
		Limitation	Value	Limitation	Value	Limitatio
5300:						
Lithic Ustic Haplocalcids-------	90	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 6%
		Bedrock depth < 20"	1.00	Bedrock depth < 20"	1.00	Bedrock depth <
		Fragments (<3") 25-50%	0.34	Fragments (<3") 25-50%	0.34	Surface fragment >25%
NOTCOM:						
Soils data not complete-----------	100	Not rated		Not rated		Not rated

The interpretation for camp areas evaluates the following soil properties at varying depths in the soil: floodin wetness; slope; depth to bedrock; depth to a cemented pan; fragments less than, equal to, or greater than 3 inches in content (SAR); salinity (EC); a clayey surface texture; Unified classes for a high content of organic matter (PT, OL, dustiness; and permeability (Ksat) that is too rapid, allowing seepage in some climates.

The interpretation for picnic areas evaluates the following soil properties at varying depths in the soil: flood wetness, slope, depth to bedrock, depth to a cemented pan, salinity (EC), pH, soil dustiness, fragments greater than fragments greater than 10 inches in size on the surface, the content of sand or clay in the surface layer, Unified cl content of organic matter (PT, OL, and OH), and permeability (Ksat) that is too rapid, allowing seepage in some clima

The interpretation for playgrounds evaluates the following soil properties at varying depths in the soil: floodi wetness, slope, depth to bedrock, depth to a cemented pan, fragments greater than 10 inches in size on the surface, f or less than 3 inches in size, Unified class for a high content of organic matter (PT, OL, and OH), soil dustiness, t sand or clay in the surface layer, pH, salinity (EC), and permeability that is too rapid, allowing seepage in some cl

Table 6b.--Recreation (Part 2)

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. The informa the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value co 0.01 to 1.00. The larger the value, the greater the potential limitation. The rating is based on the limitation w value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions a fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping: Limitation
3000:						
Copperworld	65	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") >3% coverage	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Slopes 25 to 40%	0.68	Slopes > 15%
						AWC < 2" to 40"
Copperworld, cool	15	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") >3% coverage	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Slopes > 40%	1.00	Slopes > 15%
						AWC < 2" to 40"
3241:						
Langwell	85	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") >3% coverage	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Slopes > 40%	1.00	Slopes > 15%
		Surface sand fractions 70 - 90% by wt.	0.81	Surface sand fractions 70 - 90% by wt.	0.81	AWC < 2" to 40"
3260:						
Straycow	40	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Dusty	0.50	Bedrock depth < 2
		Dusty	0.50	Surface fragments (>3") 25-75%	0.32	Slopes > 15%
		Fragments >3" 25 to 75%	0.32	Slopes 25 to 40%	0.22	Fragments > 3" >
Newera	35	Limitations		Limitations		Limitations
		Dusty	0.50	Dusty	0.50	Bedrock depth < 2
		Fragments >3" 25 to 75%	0.18	Surface fragments (>3") 25-75%	0.18	Fragments > 3" >
						AWC < 2" to 40"
Rubble land	10	Not rated		Not rated		Not rated
3261:						
Straycow	45	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments <3" >65%	1.00	Bedrock depth < 2
		Surface fragments <3" >65%	1.00	Slopes 25 to 40%	0.56	Slopes > 15%
						Fragments (gravel >50%

Table 6b.--Recreation (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Lawns, landscaping
		Limitation	Value	Limitation	Value	Limitatio
3261:						
Highland------------	25	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") .1-3% coverage	0.76	Slopes > 15%
		Fragments >10" .1 to 3%	0.76			Fragments (grave >50%
		Dusty	0.50	Slopes 25 to 40%	0.56	
				Dusty	0.50	Fragments > 3" >
Straycow, moderately sloping------------	15	Limitations		Limitations		Limitations
		Dusty	0.50	Dusty	0.50	Bedrock depth <
						Fragments (grave >50%
						Slopes > 15%
3310:						
Birdspring----------	50	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") >3% coverage	1.00	Bedrock depth <
		Fragments >10" >3%	1.00			Slopes > 15%
		Dusty	0.50	Slopes > 40%	1.00	Fragments > 3" >
				Dusty	0.50	
Zeheme--------------	25	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") >3% coverage	1.00	Bedrock depth <
		Fragments >10" >3%	1.00			Slopes > 15%
		Fragments >3" 25 to 75%	0.61	Slopes > 40%	1.00	Fragments > 3" >
				Surface fragments (>3") 25-75%	0.61	
Rock outcrop--------	15	Not rated		Not rated		Not rated
3320:						
Umberci-------------	65	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") >3% coverage	1.00	Bedrock depth <
		Fragments >10" >3%	1.00			Slopes > 15%
				Slopes > 40%	1.00	Calcium carbonat
Rock outcrop--------	20	Not rated		Not rated		Not rated
3412:						
Haleburu------------	60	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments <3" >65%	1.00	Bedrock depth <
		Surface fragments <3" >65%	1.00	Surface fragments (>10") >3% coverage	1.00	Slopes > 15%
		Fragments >10" >3%	1.00			Fragments (grave >50%
				Slopes 25 to 40%	0.22	

Table 6b.--Recreation (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Lawns, landscaping
		Limitation	Value	Limitation	Value	Limitation
3412:						
Haleburu, dry-------	25	Limitations		Limitations		Limitations
		Surface fragments <3" >65%	1.00	Surface fragments <3" >65%	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Surface fragments (>10") >3% coverage	1.00	Fragments (gravel >50%
						AWC < 2" to 40"
3420:						
Hartpeak------------	50	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") >3% coverage	1.00	Slopes > 15%
		Fragments >10" >3%	1.00			Fragments > 3" >
		Dusty	0.50	Dusty	0.50	AWC < 2" to 40"
				Surface fragments (>3") 25-75%	0.23	
Highland, moist-----	35	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") .1-3% coverage	0.76	Slopes > 15%
		Fragments >10" .1 to 3%	0.76			Fragments (gravel >50%
		Dusty	0.50	Slopes 25 to 40%	0.56	
				Dusty	0.50	Fragments > 3" >
3520:						
Arizo, loamy sand---	85	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fractions 70 - 90% by wt.	0.88	AWC < 2" to 40"
3640:						
Tonopah-------------	45	Limitations		Limitations		Limitations
		Surface fragments <3" >65%	1.00	Surface fragments <3" >65%	1.00	Fragments (gravel >50%
						AWC < 2" to 40"
Arizo---------------	40	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.36	Surface sand fractions 70 - 90% by wt.	0.36	Fragments (gravel >50%
						AWC < 2" to 40"
						Fragments >3" 5 t
3641:						
Tonopah, rarely flooded-----------	80	No limitations		No limitations		Limitations
						AWC 2-4" to 40"

Table 6b.--Recreation (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Lawns, landscapin
		Limitation	Value	Limitation	Value	Limitatio
3650:						
Weiser, rarely flooded-----------	45	No limitations		No limitations		Limitations AWC < 2" to 40" Fragments (grave >50%
Weiser-------------	40	Limitations Dusty	 0.50	Limitations Dusty	 0.50	Limitations AWC < 2" to 40"
3660:						
Colosseum, rarely flooded-----------	65	Limitations Surface sand fractions 70 - 90% by wt.	 0.32	Limitations Surface sand fractions 70 - 90% by wt.	 0.32	Limitations AWC < 2" to 40" Calcium carbonat
Colosseum, very rarely flooded-----	20	Limitations Surface sand fractions 70 - 90% by wt.	 0.41	Limitations Surface sand fractions 70 - 90% by wt.	 0.41	Limitations AWC < 2" to 40" Calcium carbonat Fragments (grave 50%
4122:						
Popups-------------	75	No limitations		No limitations		Limitations AWC 2-4" to 40" Depth to pan 20
4180:						
Peskah-------------	50	Limitations Surface fragments <3" >65% Fragments >10" >3% Surface sand fractions 70 - 90% by wt.	 1.00 1.00 0.01	Limitations Surface fragments <3" >65% Surface fragments (>10") >3% coverage Surface sand fractions 70 - 90% by wt.	 1.00 1.00 0.01	Limitations Fragments (grave >50% AWC 2-4" to 40" Fragments >3" 5
Arizo--------------	35	Limitations Surface fragments <3" >65% Fragments >10" .1 to 3%	 1.00 0.19	Limitations Surface fragments <3" >65% Surface fragments (>10") .1-3% coverage	 1.00 0.19	Limitations Fragments (grave >50% AWC < 2" to 40" Fragments >3" 5
4190:						
Weiser, cool--------	85	No limitations		No limitations		Limitations Calcium carbonat AWC 2-4" to 40"

Table 6b.--Recreation (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Lawns, landscaping
		Limitation	Value	Limitation	Value	Limitation
4200:						
Owlshead	95	Limitations		Limitations		Limitations
		Dusty	0.50	Dusty	0.50	Depth to pan < 20
						AWC < 2" to 40"
4210:						
Ustidur	85	Limitations		Limitations		Limitations
		Surface fragments <3" >65%	1.00	Surface fragments <3" >65%	1.00	Depth to pan < 20
		Slopes 15 - 25%	0.50	Surface fragments (>10") .1-3% coverage	0.19	Fragments (gravel >50%
		Fragments >10" .1 to 3%	0.19			AWC < 2" to 40"
4220:						
Minehart	85	Limitations		Limitations		Limitations
		Fragments >10" .1 to 3%	0.19	Surface fragments (>10") .1-3% coverage	0.19	AWC 2-4" to 40"
4230:						
Hoppswell	55	Limitations		Limitations		Limitations
		Surface fragments <3" >65%	1.00	Surface fragments <3" >65%	1.00	Fragments (gravel >50%
		Fragments >10" >3%	1.00	Surface fragments (>10") >3% coverage	1.00	AWC 2-4" to 40"
						Fragments >3" 5 t
Ustidur	30	Limitations		Limitations		Limitations
		Surface fragments <3" >65%	1.00	Surface fragments <3" >65%	1.00	Depth to pan < 20
		Fragments >10" .1 to 3%	0.19	Surface fragments (>10") .1-3% coverage	0.19	Fragments (gravel >50%
						AWC < 2" to 40"
4703:						
Typic Haplosalids, ponded	85	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any durat
						SAR > 12
						Surface EC 6 to 8
4711:						
Bluepoint	55	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.98	Surface sand fractions 70 - 90% by wt.	0.98	AWC 2-4" to 40"
						Slopes 8 to 15%
Petronodic Haplocalcids	25	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.12	Surface sand fractions 70 - 90% by wt.	0.12	SAR > 12

Table 6b.--Recreation (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Lawns, landscaping
		Limitation	Value	Limitation	Value	Limitation
4760:						
Hypoint, overblown--	45	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fractions 70 - 90% by wt.	0.88	AWC 2-4" to 40"
Pipeflat-----------	35	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fractions 70 - 90% by wt.	0.88	AWC 2-4" to 40"
4765:						
Typic Calcigypsids--	55	No limitations		No limitations		Limitations
						AWC < 2" to 40"
						Surface EC 4 to
Typic Haplosalids, ponded------------	25	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any dura
		Dusty	0.50	Dusty	0.50	Surface EC > 8 m
						SAR > 12
4770:						
Haymont------------	40	Limitations		Limitations		Limitations
		Dusty	0.50	Dusty	0.50	Surface EC > 8 m
						SAR > 12
Haymont, moist------	30	Limitations		Limitations		Limitations
		Dusty	0.50	Dusty	0.50	Surface EC > 8 m
						SAR > 12
Bluepoint----------	20	Limitations		Limitations		Limitations
		Surface sand fractions 70 - 90% by wt.	0.98	Surface sand fractions 70 - 90% by wt.	0.98	Slopes > 15%
		Slopes 15 - 25%	0.50			AWC 2-4" to 40"
4775:						
Petronodic Haplocalcids-------	45	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any dura
		Dusty	0.50	Dusty	0.50	SAR > 12
Calcic Petrocalcids-	40	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any dura
		Surface sand fractions 70 - 90% by wt.	0.12	Surface sand fractions 70 - 90% by wt.	0.12	Calcium carbonat
						SAR > 12

Table 6b.--Recreation (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Lawns, landscaping
		Limitation	Value	Limitation	Value	Limitation
4820:						
Playa	90	Not rated		Not rated		Not rated
5000:						
Copperworld	70	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Surface fragments (>10") >3% coverage	1.00	Bedrock depth < 2
		Fragments >10" >3%	1.00	Slopes 25 to 40%	0.78	Slopes > 15%
						AWC < 2" to 40"
Lithic Ustic Haplargids, cool	25	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Slopes > 40%	1.00	Bedrock depth < 2
		Surface sand fractions 70 - 90% by wt.	0.88	Surface sand fractions 70 - 90% by wt.	0.88	Slopes > 15%
						AWC < 2" to 40"
5300:						
Lithic Ustic Haplocalcids	90	Limitations		Limitations		Limitations
		Slopes > 25%	1.00	Slopes > 40%	1.00	Bedrock depth < 2
						Slopes > 15%
						AWC < 2" to 40"
NOTCOM:						
Soils data not complete	100	Not rated		Not rated		Not rated

The interpretation for paths and trails evaluates the following soil properties at varying depths in the soil: fl wetness; slope; fragments less than, equal to, or greater than 3 inches in size; the content of clay and sand in the s fragments on the surface greater than or equal to 10 inches in size; Unified classes for a high content of organic mat OH); soil dustiness; and the hazard of water erosion.

The interpretation for off-road motorcycle trails evaluates the following soil properties at varying depths in th flooding; ponding; wetness; slope; soil dustiness; fragments greater than, equal to, or less than 3 inches in size; th sand or clay in the surface layer; and Unified classes for a high content of organic matter (PT, OL, and OH).

The interpretation for lawn, landscaping, and golf fairways evaluates the following soil properties at varying de soil: flooding; ponding; wetness; slope; depth to bedrock; depth to a cemented pan; fragments greater than, equal to, inches in size; Unified class for a high content of organic matter (PT, OL, and OH); soil dustiness; the content of sa the surface layer; fragments on the surface greater than or equal to 10 inches in size; soil pH; salinity (EC); sodium calcium carbonates; and sulfur content.

Table 7a.--Building Site Development (Part 1)

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. The informa
the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value co
0.01 to 1.00. The larger the value, the greater the potential limitation. The rating is based on the limitation v
value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions a
fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in
limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercia
		Limitation	Value	Limitation	Value	Limitatio
3000:						
Copperworld----------	65	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
Copperworld, cool---	15	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
3241:						
Langwell------------	85	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
3260:						
Straycow------------	40	Limitations		Limitations		Limitations
		Bedrock (soft) < 20" depth	1.00	Slopes > 15%	1.00	Bedrock (soft) <
		Slopes > 15%	1.00	Bedrock (soft) < 20" depth	1.00	Slopes > 8%
		Shrink-swell (LEP 3-6)	0.78	Shrink-swell (LEP 3-6)	0.78	Shrink-swell (LE
Newera--------------	35	Limitations		Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Slopes > 8%
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) <
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Shrink-swell (LE
Rubble land---------	10	Not rated		Not rated		Not rated
3261:						
Straycow------------	45	Limitations		Limitations		Limitations
		Bedrock (soft) < 20" depth	1.00	Slopes > 15%	1.00	Bedrock (soft) <
		Slopes > 15%	1.00	Bedrock (soft) < 20" depth	1.00	Slopes > 8%
		Shrink-swell (LEP 3-6)	0.78	Shrink-swell (LEP 3-6)	0.78	Shrink-swell (LE
Highland------------	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) < 40" depth	1.00	Shrink-swell (LE
		Bedrock (hard) from 20 to 40"	0.50	Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) f 40"

Table 7a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercia[l buildings]: Limitation
3261:						
Straycow, moderately sloping-----------	15	Limitations		Limitations		Limitations
		Bedrock (soft) < 20" depth	1.00	Bedrock (soft) < 20" depth	1.00	Bedrock (soft) <
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Shrink-swell (LEP 3-6)	0.78	Shrink-swell (LEP 3-6)	0.78	Shrink-swell (LEP
3310:						
Birdspring----------	50	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
Zeheme--------------	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
		Fragments (>3") 25 to 50%	0.01	Fragments (>3") 25 to 50%	0.01	Fragments (>3") 2
Rock outcrop--------	15	Not rated		Not rated		Not rated
3320:						
Umberci-------------	65	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
Rock outcrop--------	20	Not rated		Not rated		Not rated
3412:						
Haleburu------------	60	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
Haleburu, dry-------	25	Limitations		Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Slopes > 8%
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Bedrock (hard) <
3420:						
Hartpeak------------	50	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) from 20 to 40"	0.98	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) fr 40"
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP
Highland, moist-----	35	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) < 40" depth	1.00	Shrink-swell (LEP
		Bedrock (hard) from 20 to 40"	0.50	Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) fr 40"

Table 7a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercia
		Limitation	Value	Limitation	Value	Limitation
3520:						
Arizo loamy sand----	85	No limitations		No limitations		Limitations
						Slopes are from
3640:						
Tonopah-------------	45	No limitations		No limitations		Limitations
						Slopes are from
Arizo---------------	40	No limitations		No limitations		Limitations
						Slopes are from
3641:						
Tonopah, rarely flooded-----------	80	Limitations		Limitations		Limitations
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare
						Slopes are from
3650:						
Weiser, rarely flooded-----------	45	Limitations		Limitations		Limitations
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare
						Slopes are from
Weiser--------------	40	No limitations		No limitations		No limitations
3660:						
Colosseum, rarely flooded-----------	65	Limitations		Limitations		Limitations
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare
Colosseum, very rarely flooded-----	20	No limitations		No limitations		Limitations
						Slopes are from
4122:						
Popups--------------	75	No limitations		No limitations		Limitations
						Slopes are from
4180:						
Peskah--------------	50	No limitations		No limitations		Limitations
						Slopes are from
Arizo---------------	35	No limitations		No limitations		Limitations
						Slopes are from

Table 7a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercia
		Limitation	Value	Limitation	Value	Limitation
4190:						
Weiser, cool--------	85	No limitations		No limitations		Limitations Slopes are from 4
4200:						
Owlshead-----------	95	No limitations		No limitations		Limitations Slopes are from 4
4210:						
Ustidur------------	85	Limitations Pan (thick) < 20" depth Slopes > 15%	 1.00 1.00	Limitations Pan (thick) < 40" depth Slopes > 15%	 1.00 1.00	Limitations Slopes > 8% Pan (thick) < 20"
4220:						
Minehart-----------	85	No limitations		No limitations		Limitations Slopes are from 4
4230:						
Hoppswell----------	55	No limitations		No limitations		Limitations Slopes are from 4
Ustidur------------	30	Limitations Pan (thick) < 20" depth Slopes > 15%	 1.00 1.00	Limitations Pan (thick) < 40" depth Slopes > 15%	 1.00 1.00	Limitations Slopes > 8% Pan (thick) < 20'
4703:						
Typic Haplosalids, ponded------------	85	Limitations Ponded (any duration) Shrink-swell (LEP 3-6)	 1.00 0.50	Limitations Ponded (any duration) Shrink-swell (LEP 3-6)	 1.00 0.50	Limitations Ponded (any durat Shrink-swell (LEI
4711:						
Bluepoint----------	55	Limitations Slopes 8 to 15%	 0.37	Limitations Slopes 8 to 15%	 0.37	Limitations Slopes > 8%
Petronodic Haplocalcids-------	25	No limitations		No limitations		No limitations
4760:						
Hypoint, overblown--	45	No limitations		No limitations		No limitations
Pipeflat-----------	35	No limitations		No limitations		No limitations
4765:						
Typic Calcigypsids--	55	No limitations		No limitations		No limitations

Table 7a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercia: Limitation
4765:						
Typic Haplosalids, ponded------------	25	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any durat
4770:						
Haymont-------------	40	Limitations		Limitations		Limitations
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare
Haymont, moist------	30	Limitations		Limitations		Limitations
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare
Bluepoint-----------	20	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
4775:						
Petronodic Haplocalcids-------	45	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any durat
Calcic Petrocalcids-	40	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any durat
4820:						
Playa---------------	90	Not rated		Not rated		Not rated
5000:						
Copperworld---------	70	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
Lithic Ustic Haplargids, cool---	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <
5300:						
Lithic Ustic Haplocalcids-------	90	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Slopes > 8%
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" depth	1.00	Bedrock (hard) <

Table 7a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercia
		Limitation	Value	Limitation	Value	Limitation
NOTCOM:						
Soils data not complete----------	100	Not rated		Not rated		Not rated

The interpretation for dwellings without basements evaluates the following soil properties, some at varying depth flooding, ponding, wetness, slope, subsidence of organic soils, shrink-swell potential expressed as linear extensibili (LEP), organic Unified classes for low soil strength (PT, OL, or OH), depth to hard or soft bedrock, depth to a thick pan, and fragments greater than 3 inches in size.

The interpretation for dwellings with basements evaluates the following soil properties, some at varying depths f flooding, ponding, wetness, slope, subsidence of organic soils, shrink-swell potential expressed as linear extensibili (LEP), organic Unified classes for low strength (PT, OL, or OH), depth to hard or soft bedrock, depth to a thick or th and fragments greater than 3 inches in size.

The interpretation for small commercial buildings evaluates the following soil properties, some at varying depths flooding, ponding, wetness, slope, subsidence of organic soils, shrink-swell potential expressed as linear extensibili (LEP), depth to hard or soft bedrock, depth to a thick or thin cemented pan, and fragments greater than 3 inches in si

Table 7b.--Building Site Development (Part 2)

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. indicates the dominant soil condition but does not eliminate the need for onsite investigation. The n value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. Th on the limitation with the highest value. Only the three highest value limitations are listed. There limitations. Fine-earth fractions and coarse fragments are reported on a weight basis. An explanation criteria and of the abbreviations used in describing the limitations is given at the end of the table

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excava
		Limitation	Value	Limitation
3000:				
Copperworld	65	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 15%
		Frost action possible	0.50	Caving potential is low
Copperworld, cool	15	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 15%
		Frost action possible	0.50	Caving potential is low
3241:				
Langwell	85	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 15%
		Frost action possible	0.50	Caving potential is low
3260:				
Straycow	40	Limitations		Limitations
		Slopes > 15%	1.00	Bedrock (soft) < 20" de
		Bedrock (soft) < 20" depth	1.00	Slopes > 15%
		Shrink-swell (LEP 3-6)	0.78	Caving potential is low
Newera	35	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" de
		Shrink-swell (LEP 3-6)	0.50	Slopes 8 to 15%
		Slopes 8 to 15%	0.16	Caving potential is low
Rubble land	10	Not rated		Not rated
3261:				
Straycow	45	Limitations		Limitations
		Slopes > 15%	1.00	Bedrock (soft) < 20" de
		Bedrock (soft) < 20" depth	1.00	Slopes > 15%
		Shrink-swell (LEP 3-6)	0.78	Caving potential is low

Table 7b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavat
		Limitation	Value	Limitation
3261:				
Highland	25	Limitations		Limitations
		Slopes > 15%	1.00	Bedrock (hard) < 40" dep
		Shrink-swell (LEP 3-6)	0.50	Slopes > 15%
		Bedrock (hard) from 20 to 40"	0.50	Caving potential
Straycow, moderately sloping	15	Limitations		Limitations
		Bedrock (soft) < 20" depth	1.00	Bedrock (soft) < 20" dep
		Slopes > 15%	1.00	Slopes > 15%
		Shrink-swell (LEP 3-6)	0.78	Caving potential is low
3310:				
Birdspring	50	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 15%
				Caving potential is low
Zeheme	25	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 15%
		Fragments (>3") 25 to 50%	0.01	Caving potential is low
Rock outcrop	15	Not rated		Not rated
3320:				
Umberci	65	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 15%
		Frost action possible	0.50	Caving potential is low
Rock outcrop	20	Not rated		Not rated
3412:				
Haleburu	60	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 15%
				Caving potential is low
Haleburu, dry	25	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" dep
		Slopes 8 to 15%	0.16	Slopes 8 to 15%
				Caving potential is low

Table 7b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excava
		Limitation	Value	Limitation
3420:				
Hartpeak	50	Limitations		Limitations
		Slopes > 15%	1.00	Bedrock (hard) < 40" de
		Bedrock (hard) from 20 to 40"	0.98	Slopes > 15%
		Shrink-swell (LEP 3-6)	0.50	Fragments (>3") 25 to 5
Highland, moist	35	Limitations		Limitations
		Slopes > 15%	1.00	Bedrock (hard) < 40" de
		Shrink-swell (LEP 3-6)	0.50	Slopes > 15%
		Bedrock (hard) from 20 to 40"	0.50	Caving potential
3520:				
Arizo loamy sand	85	No limitations		Limitations
				Caving potential
3640:				
Tonopah	45	No limitations		Limitations
				Caving potential
Arizo	40	No limitations		Limitations
				Caving potential
3641:				
Tonopah, rarely flooded	80	Limitations		Limitations
		Rare flooding	0.50	Caving potential
3650:				
Weiser, rarely flooded	45	Limitations		Limitations
		Rare flooding	0.50	Caving potential
Weiser	40	No limitations		Limitations
				Caving potential
3660:				
Colosseum, rarely flooded	65	Limitations		Limitations
		Rare flooding	0.50	Caving potential
Colosseum, very rarely flooded	20	No limitations		Limitations
				Caving potential
4122:				
Popups	75	Limitations		Limitations
		Frost action possible	0.50	Pan (thick) < 40" depth
		Pan from 20 to 40"	0.01	Caving potential

Table 7b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Limitation	Local roads and streets: Value	Shallow excavat: Limitation
4180:				
Peskah	50	No limitations		Limitations
				Caving potential
Arizo	35	No limitations		Limitations
				Caving potential
4190:				
Weiser, cool	85	No limitations		Limitations
				Caving potential
4200:				
Owlshead	95	Limitations		Limitations
		Pan (thick) < 20" depth	1.00	Pan (thick) < 40" depth
				Caving potential
4210:				
Ustidur	85	Limitations		Limitations
		Pan (thick) < 20" depth	1.00	Pan (thick) < 40" depth
		Slopes > 15%	1.00	Caving potential
				Slopes > 15%
4220:				
Minehart	85	No limitations		Limitations
				Caving potential
4230:				
Hoppswell	55	Limitations		Limitations
		Frost action possible	0.50	Caving potential
Ustidur	30	Limitations		Limitations
		Pan (thick) < 20" depth	1.00	Pan (thick) < 40" depth
		Slopes > 15%	1.00	Caving potential
		Frost action possible	0.50	Slopes > 15%
4703:				
Typic Haplosalids, ponded	85	Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)
		AASHTO GIN 5-8 (soil strength)	0.78	Caving potential is low
		Shrink-swell (LEP 3-6)	0.50	
4711:				
Bluepoint	55	Limitations		Limitations
		Slopes 8 to 15%	0.37	Caving potential
				Slopes 8 to 15%

Table 7b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Limitation	Value	Shallow excava: Limitation
4711:				
Petronodic Haplocalcids	25	Limitations		Limitations
		AASHTO GIN >8 (low soil strength)	1.00	Caving potential is low
4760:				
Hypoint, overblown	45	No limitations		Limitations
				Caving potential
Pipeflat	35	No limitations		Limitations
				Caving potential
4765:				
Typic Calcigypsids	55	No limitations		Limitations
				Caving potential is low
Typic Haplosalids, ponded	25	Limitations		Limitations
		AASHTO GIN >8 (low soil strength)	1.00	Ponded (any duration)
		Ponded (any duration)	1.00	Caving potential is low
4770:				
Haymont	40	Limitations		Limitations
		Rare flooding	0.50	Caving potential is low
Haymont, moist	30	Limitations		Limitations
		Rare flooding	0.50	Caving potential is low
Bluepoint	20	Limitations		Limitations
		Slopes > 15%	1.00	Caving potential
				Slopes > 15%
4775:				
Petronodic Haplocalcids	45	Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)
		AASHTO GIN >8 (low soil strength)	1.00	Caving potential is low
Calcic Petrocalcids	40	Limitations		Limitations
		Ponded (any duration)	1.00	Pan (thick) < 40" depth
		Pan from 20 to 40"	0.61	Ponded (any duration)
				Caving potential is low
4820:				
Playa	90	Not rated		Not rated

Table 7b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavat
		Limitation	Value	Limitation
5000:				
Copperworld-------------------	70	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 15%
		Frost action possible	0.50	Caving potential is low
Lithic Ustic Haplargids, cool--	25	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 15%
		Frost action possible	0.50	Caving potential is low
5300:				
Lithic Ustic Haplocalcids------	90	Limitations		Limitations
		Bedrock (hard) < 20" depth	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 15%
		Frost action possible	0.50	Caving potential is low
NOTCOM:				
Soils data not complete--------	100	Not rated		Not rated

The interpretation for local roads and streets evaluates the following soil properties at varying dept flooding, ponding, wetness, slope, organic Unified classes for low soil strength (PT, OL, or OH), content o hard or soft bedrock, depth to a thick or thin cemented pan, fragments greater than 3 inches in size, bulk caving potential of the soil.

The interpretation for shallow excavation evaluates the following soil properties at varying depths in flooding, ponding, wetness, slope, subsidence of organic soils, shrink-swell potential expressed as linear percent (LEP), potential frost action, depth to hard or soft bedrock, depth to a thick or thin cemented par greater than 3 inches in size, and soil strength expressed as the AASHTO group index number (AASHTO GIN).

Table 8a.--Sanitary Facilities (Part 1)

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. indicates the dominant soil condition but does not eliminate the need for onsite investigation. The nu columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The ratin limitation with the highest value. Only the three highest value limitations are listed. There may be m Fine-earth fractions and coarse fragments are reported on a weight basis. An explanation of the rating the abbreviations used in describing the limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage Lago
		Limitation	Value	Limitation
3000:				
Copperworld	65	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	Permeability .6-2"/hr (seepage)
Copperworld, cool	15	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	Permeability .6-2"/hr (seepage)
3241:				
Langwell	85	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	
3260:				
Straycow	40	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (soft) < 40" de
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	
Newera	35	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" de
		Restricted permeability due to bedrock or hardpan	1.00	Slopes > 8%
		Slopes 8 to 15%	0.16	
Rubble land	10	Not rated		Not rated

Table 8a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Limitation	Value	Sewage Lagoo: Limitation
3261:				
Straycow	45	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (soft) < 40" dep
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	
Highland	25	Limitations		Limitations
		Slopes > 15%	1.00	Bedrock (hard) < 40" dep
		Depth to bedrock < 40"	1.00	Slopes > 8%
		Seepage in bottom layer	1.00	Permeability > 2"/hr (se
Straycow, moderately sloping	15	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (soft) < 40" dep
		Restricted permeability due to bedrock or hardpan	1.00	Slopes > 8%
		Slopes > 15%	1.00	
3310:				
Birdspring	50	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	
Zeheme	25	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	Permeability > 2"/hr (se
Rock outcrop	15	Not rated		Not rated
3320:				
Umberci	65	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	
Rock outcrop	20	Not rated		Not rated

Table 8a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields Limitation	Value	Sewage Lagoo Limitation
3412:				
Haleburu	60	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	
Haleburu, dry	25	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" dep
		Restricted permeability due to bedrock or hardpan	1.00	Slopes > 8%
		Seepage in bottom layer	1.00	
3420:				
Hartpeak	50	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" dep
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	Fragments (>3") 20-35%
Highland, moist	35	Limitations		Limitations
		Slopes > 15%	1.00	Bedrock (hard) < 40" dep
		Depth to bedrock < 40"	1.00	Slopes > 8%
		Permeability < .6"/hr in 24-60" (slow perc)	0.99	Permeability > 2"/hr (se
3520:				
Arizo loamy sand	85	Limitations		Limitations
		Permeability > 6"/hr in 24-60" (seepage and poor filter)	1.00	Permeability > 2"/hr (se
				Slopes 2 to 8%
		Seepage in bottom layer	1.00	
		Very rare flooding	0.20	
3640:				
Tonopah	45	Limitations		Limitations
		Permeability > 6"/hr in 24-60" (seepage and poor filter)	1.00	Permeability > 2"/hr (se
				Slopes 2 to 8%
		Seepage in bottom layer	1.00	
		Very rare flooding	0.20	
Arizo	40	Limitations		Limitations
		Permeability > 6"/hr in 24-60" (seepage and poor filter)	1.00	Permeability > 2"/hr (se
				Slopes 2 to 8%
		Seepage in bottom layer	1.00	
		Very rare flooding	0.20	

Table 8a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Limitation	Septic tank absorption fields: Value	Sewage Lagoo: Limitation
3641:				
Tonopah, rarely flooded--------	80	Limitations		Limitations
		Permeability > 6"/hr in 24-60"	1.00	Permeability > 2"/hr (se
		(seepage and poor filter)		Rare flooding
		Seepage in bottom layer	1.00	Slopes 2 to 8%
		Rare flooding	0.40	
3650:				
Weiser, rarely flooded---------	45	Limitations		Limitations
		Rare flooding	0.40	Permeability .6-2"/hr (s
		Permeability ranges .6 - 2"/hr		seepage)
		(slow perc)	0.32	Slopes 2 to 8%
				Rare flooding
Weiser-------------------------	40	Limitations		Limitations
		Permeability ranges .6 - 2"/hr	0.50	Permeability .6-2"/hr (s
		(slow perc)		seepage)
				Slopes 2 to 8%
3660:				
Colosseum, rarely flooded------	65	Limitations		Limitations
		Permeability > 6"/hr in 24-60"	1.00	Permeability > 2"/hr (se
		(seepage and poor filter)		Rare flooding
		Seepage in bottom layer	1.00	
		Rare flooding	0.40	
Colosseum, very rarely flooded-	20	Limitations		Limitations
		Permeability > 6"/hr in 24-60"	1.00	Permeability > 2"/hr (se
		(seepage and poor filter)		Slopes 2 to 8%
		Seepage in bottom layer	1.00	
		Very rare flooding	0.20	
4122:				
Popups-------------------------	75	Limitations		Limitations
		Depth to pan < 40"	1.00	Depth to pan < 40"
				Permeability > 2"/hr (se
				Slopes 2 to 8%
4180:				
Peskah-------------------------	50	Limitations		Limitations
		Permeability > 6"/hr in 24-60"	1.00	Permeability > 2"/hr (se
		(seepage and poor filter)		Depth to pan from 40-60"
		Depth to pan 40 to 72"	0.98	Slopes 2 to 8%

Table 8a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Limitation	Value	Sewage Lago[ons]: Limitation
4180:				
Arizo	35	Limitations		Limitations
		Seepage in bottom layer	1.00	Permeability > 2"/hr (s[eepage]
		Permeability > 6"/hr in 24-60" (seepage and poor filter)	1.00	Slopes 2 to 8%
		Very rare flooding	0.20	
4190:				
Weiser, cool	85	Limitations		Limitations
		Seepage in bottom layer	1.00	Permeability > 2"/hr (s[eepage]
				Slopes 2 to 8%
4200:				
Owlshead	95	Limitations		Limitations
		Depth to pan < 40"	1.00	Depth to pan < 40"
		Restricted permeability due to bedrock or hardpan	1.00	Permeability > 2"/hr (s[eepage]
				Slopes 2 to 8%
		Seepage in bottom layer	1.00	
4210:				
Ustidur	85	Limitations		Limitations
		Depth to pan < 40"	1.00	Depth to pan < 40"
		Restricted permeability due to bedrock or hardpan	1.00	Slopes > 8%
				Permeability > 2"/hr (s[eepage]
		Slopes > 15%	1.00	
4220:				
Minehart	85	Limitations		Limitations
		Seepage in bottom layer	1.00	Permeability > 2"/hr (s[eepage]
				Slopes 2 to 8%
4230:				
Hoppswell	55	Limitations		Limitations
		Seepage in bottom layer	1.00	Permeability > 2"/hr (s[eepage]
		Very rare flooding	0.20	Slopes 2 to 8%
Ustidur	30	Limitations		Limitations
		Depth to pan < 40"	1.00	Depth to pan < 40"
		Restricted permeability due to bedrock or hardpan	1.00	Slopes > 8%
				Permeability > 2"/hr (s[eepage]
		Slopes > 15%	1.00	
4703:				
Typic Haplosalids, ponded	85	Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)
		Permeability < .6"/hr in 24-60" (slow perc)	0.99	Permeability .6-2"/hr (seepage)

Table 8a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Limitation	Septic tank absorption fields: Value	Sewage Lagoo: Limitation
4711:				
Bluepoint----------------------	55	Limitations		Limitations
		Permeability > 6"/hr in 24-60"	1.00	Slopes > 8%
		(seepage and poor filter)		Permeability > 2"/hr (se
		Seepage in bottom layer	1.00	
		Slopes 8 to 15%	0.37	
Petronodic Haplocalcids--------	25	Limitations		No limitations
		Permeability < .6"/hr in 24-60"	1.00	
		(slow perc)		
4760:				
Hypoint, overblown------------	45	Limitations		Limitations
		Permeability > 6"/hr in 24-60"	1.00	Permeability > 2"/hr (se
		(seepage and poor filter)		
		Seepage in bottom layer	1.00	
Pipeflat----------------------	35	Limitations		Limitations
		Permeability > 6"/hr in 24-60"	1.00	Permeability > 2"/hr (se
		(seepage and poor filter)		
		Seepage in bottom layer	1.00	
4765:				
Typic Calcigypsids------------	55	Limitations		Limitations
		Permeability ranges .6 - 2"/hr	0.92	Permeability .6-2"/hr (s
		(slow perc)		seepage)
Typic Haplosalids, ponded------	25	Limitations		Limitations
		Permeability < .6"/hr in 24-60"	1.00	Ponded (any duration)
		(slow perc)		
		Ponded (any duration)	1.00	
4770:				
Haymont-----------------------	40	Limitations		Limitations
		Permeability ranges .6 - 2"/hr	0.50	Permeability .6-2"/hr (s
		(slow perc)		seepage)
		Rare flooding	0.40	Rare flooding
Haymont, moist----------------	30	Limitations		Limitations
		Permeability ranges .6 - 2"/hr	0.50	Permeability .6-2"/hr (s
		(slow perc)		seepage)
		Rare flooding	0.40	Rare flooding

Table 8a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Limitation	Septic tank absorption fields: Value	Sewage Lago: Limitation
4770:				
Bluepoint	20	Limitations		Limitations
		Seepage in bottom layer	1.00	Slopes > 8%
		Slopes > 15%	1.00	Permeability > 2"/hr (s
		Permeability > 6"/hr in 24-60" (seepage and poor filter)	1.00	
4775:				
Petronodic Haplocalcids	45	Limitations		Limitations
		Permeability < .6"/hr in 24-60" (slow perc)	1.00	Ponded (any duration)
		Ponded (any duration)	1.00	
		Very rare flooding	0.20	
Calcic Petrocalcids	40	Limitations		Limitations
		Permeability < .6"/hr in 24-60" (slow perc)	1.00	Ponded (any duration)
				Depth to pan < 40"
		Ponded (any duration)	1.00	Permeability > 2"/hr (s
		Depth to pan < 40"	1.00	
4820:				
Playa	90	Not rated		Not rated
5000:				
Copperworld	70	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	Permeability .6-2"/hr (seepage)
Lithic Ustic Haplargids, cool	25	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	Permeability .6-2"/hr (seepage)
5300:				
Lithic Ustic Haplocalcids	90	Limitations		Limitations
		Depth to bedrock < 40"	1.00	Bedrock (hard) < 40" de
		Slopes > 15%	1.00	Slopes > 8%
		Restricted permeability due to bedrock or hardpan	1.00	Permeability > 2"/hr (s

Table 8a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage Lagoo[ns]
		Limitation	Value	Limitation
NOTCOM:				
Soils data not complete--------	100	Not rated		Not rated

The interpretation for septic tanks adsorption fields evaluates the following soil properties at varyin soil: flooding; ponding; wetness; slope; subsidence of organic soils; depth to hard or soft bedrock; depth t permeability that is too fast, allowing seepage; permeability that is too slow; and an impermeable layer at

The interpretation for sewage lagoons evaluates the following soil properties at varying depths in the ponding, wetness, slope, organic Unified classes for low strength (PT, OL, or OH), depth to hard or soft bed cemented pan, fragments greater than 3 inches in size, and permeability that is too fast, allowing seepage.

Table 8b.--Sanitary Facilities (Part 2)

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. The infor
the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value
from 0.01 to 1.00. The larger the value, the greater the potential limitation. The rating is based on the limit
highest value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth f
coarse fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations
describing the limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover f
		Limitation	Value	Limitation	Value	Limitatio
3000:						
Copperworld	65	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic	1.00			Slopes > 15%
		bedrock < 72"				Permeability > 2
Copperworld, cool	15	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic	1.00			Slopes > 15%
		bedrock < 72"				Permeability > 2
3241:						
Langwell	85	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic	1.00			Slopes > 15%
		bedrock < 72"				Permeability > 2
		Sandy textures (COSL, LS,	0.50			
		LFS, or LVFS)				
3260:						
Straycow	40	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Fragments (<75mm
		Lithic or paralithic	1.00			Depth to bedrock
		bedrock < 72"				Slopes > 15%
Newera	35	Limitations		Limitations		Limitations
		Lithic or paralithic	1.00	Slopes 8 to 15%	0.16	Fragments (<75mm
		bedrock < 72"				Depth to bedrock
		Slopes 8 to 15%	0.16			Slopes 8 to 15%
Rubble land	10	Not rated		Not rated		Not rated
3261:						
Straycow	45	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Fragments (<75mm
		Lithic or paralithic	1.00			Depth to bedrock
		bedrock < 72"				Slopes > 15%

Table 8b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Limitation	Value	Area sanitary landfill: Limitation	Value	Daily cover fo: Limitation
3261:						
Highland	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic bedrock < 72"	1.00			Slopes > 15%
						Fragments (<75mm)
Straycow, moderately sloping	15	Limitations		Limitations		Limitations
		Lithic or paralithic bedrock < 72"	1.00	Slopes > 15%	1.00	Fragments (<75mm)
						Depth to bedrock
		Slopes > 15%	1.00			Slopes > 15%
3310:						
Birdspring	50	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Fragments (<75mm)
		Lithic or paralithic bedrock < 72"	1.00			Depth to bedrock
						Slopes > 15%
Zeheme	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic bedrock < 72"	1.00			Slopes > 15%
						Fragments (<75mm)
		Fragments (3-10") 15-35%	0.05			
Rock outcrop	15	Not rated		Not rated		Not rated
3320:						
Umberci	65	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Fragments (<75mm)
		Lithic or paralithic bedrock < 72"	1.00			Depth to bedrock
						Slopes > 15%
Rock outcrop	20	Not rated		Not rated		Not rated
3412:						
Haleburu	60	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Fragments (<75mm)
		Lithic or paralithic bedrock < 72"	1.00			Depth to bedrock
						Slopes > 15%
Haleburu, dry	25	Limitations		Limitations		Limitations
		Lithic or paralithic bedrock < 72"	1.00	Slopes 8 to 15%	0.16	Fragments (<75mm)
						Depth to bedrock
		Slopes 8 to 15%	0.16			Permeability > 2.

Table 8b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover f
		Limitation	Value	Limitation	Value	Limitatio
3420:						
Hartpeak	50	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic bedrock < 72"	1.00			Slopes > 15%
		Fragments (3-10") 15-35%	0.91			Fragments (<75mm
Highland, moist	35	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Fragments (<75mm
		Lithic or paralithic bedrock < 72"	1.00			Depth to bedrock
						Slopes > 15%
3520:						
Arizo loamy sand	85	Limitations		Limitations		Limitations
		Sandy textures (COS, S, FS, LCOS, or VFS)	1.00	Very rare flooding	0.20	Texture is S, FS
						Permeability > 2
						Fragments (<75mm
3640:						
Tonopah	45	Limitations		Limitations		Limitations
		Sandy textures (COS, S, FS, LCOS, or VFS)	1.00	Very rare flooding	0.20	Fragments (<75mm
						Texture is S, FS
						Permeability > 2
Arizo	40	Limitations		Limitations		Limitations
		Sandy textures (COS, S, FS, LCOS, or VFS)	1.00	Very rare flooding	0.20	Fragments (<75mm
						Texture is S, FS
						Permeability > 2
3641:						
Tonopah, rarely flooded	80	Limitations		Limitations		Limitations
		Rare flooding	0.50	Rare flooding	0.40	Permeability > 2
		Sandy textures (COSL, LS, LFS, or LVFS)	0.50			Texture is LCOS, VFS
						Fragments (<75mm
3650:						
Weiser, rarely flooded	45	Limitations		Limitations		Limitations
		Rare flooding	0.50	Rare flooding	0.40	Fragments (<75mm
Weiser	40	Limitations		No limitations		Limitations
		Fragments (3-10") 15-35%	0.01			Fragments (<75mm

Table 8b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Limitation	Value	Area sanitary landfill: Limitation	Value	Daily cover fo[r landfill]: Limitation
3660: Colosseum, rarely flooded----------------	65	Limitations Rare flooding Sandy textures (COSL, LS, LFS, or LVFS)	 0.50 0.50	Limitations Rare flooding	 0.40	Limitations Fragments (<75mm) Permeability > 2. Calcium carbonate
Colosseum, very rarely flooded----------------	20	Limitations Sandy textures (COSL, LS, LFS, or LVFS)	 0.50	Limitations Very rare flooding	 0.20	Limitations Fragments (<75mm) Permeability > 2. Calcium carbonate
4122: Popups------------------	75	Limitations Depth to thick cemented pan	 1.00	No limitations		Limitations Depth to pan < 40 Permeability > 2. Fragments (<75mm)
4180: Peskah------------------	50	Limitations Sandy textures (COS, S, FS, LCOS, or VFS) Depth to thin cemented pan	 1.00 0.50	No limitations		Limitations Fragments (<75mm) Texture is S, FS, Permeability > 2.
Arizo-------------------	35	Limitations Sandy textures (COS, S, FS, LCOS, or VFS) Fragments (3-10") 15-35%	 1.00 0.14	Limitations Very rare flooding	 0.20	Limitations Fragments (<75mm) Texture is S, FS, Permeability > 2.
4190: Weiser, cool------------	85	No limitations		No limitations		Limitations Fragments (<75mm) Permeability > 2 Calcium carbonate
4200: Owlshead----------------	95	Limitations Depth to thick cemented pan	 1.00	No limitations		Limitations Depth to pan < 40 Permeability > 2 Fragments (<75mm)
4210: Ustidur-----------------	85	Limitations Depth to thick cemented pan Slopes > 15%	 1.00 1.00	Limitations Slopes > 15%	 1.00	Limitations Fragments (<75mm) Depth to pan < 40 Slopes > 15%

Table 8b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Limitation	Trench sanitary landfill: Value	Area sanitary landfill: Limitation	Area sanitary landfill: Value	Daily cover f...: Limitatio...
4220:						
Minehart	85	No limitations		No limitations		Limitations
						Fragments (<75mm
						Permeability > 2
4230:						
Hoppswell	55	Limitations		Limitations		Limitations
		Sandy textures (COS, S, FS, LCOS, or VFS)	1.00	Very rare flooding	0.20	Fragments (<75mm
						Texture is S, FS
						Permeability > 2
Ustidur	30	Limitations		Limitations		Limitations
		Depth to thick cemented pan	1.00	Slopes > 15%	1.00	Fragments (<75mm
		Slopes > 15%	1.00			Depth to pan < 4
						Slopes > 15%
4703:						
Typic Haplosalids, ponded	85	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any dura
		EC > 16 dS/m	1.00			
4711:						
Bluepoint	55	Limitations		Limitations		Limitations
		Sandy textures (COS, S, FS, LCOS, or VFS)	1.00	Slopes 8 to 15%	0.37	Texture is S, FS
						Permeability > 2
		Slopes 8 to 15%	0.37			Slopes 8 to 15%
Petronodic Haplocalcids	25	No limitations		No limitations		No Limitations
4760:						
Hypoint, overblown	45	Limitations		No limitations		Limitations
		Sandy textures (COS, S, FS, LCOS, or VFS)	1.00			Texture is S, FS
						Permeability > 2
Pipeflat	35	Limitations		No limitations		Limitations
		Sandy textures (COSL, LS, LFS, or LVFS)	0.50			Permeability > 2
						Texture is LCOS, VFS
						Fragments (<75mm
4765:						
Typic Calcigypsids	55	No limitations		No limitations		Not rated

Table 8b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Limitation	Value	Area sanitary landfill: Limitation	Value	Daily cover fo[r landfill]: Limitation
4765:						
Typic Haplosalids, ponded----------------	25	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any durat
		EC > 16 dS/m	1.00			
4770:						
Haymont----------------	40	Limitations		Limitations		No Limitations
		EC > 16 dS/m	1.00	Rare flooding	0.40	
		Rare flooding	0.50			
Haymont, moist---------	30	Limitations		Limitations		No Limitations
		EC > 16 dS/m	1.00	Rare flooding	0.40	
		Rare flooding	0.50			
Bluepoint--------------	20	Limitations		Limitations		Limitations
		Sandy textures (COS, S, FS, LCOS, or VFS)	1.00	Slopes > 15%	1.00	Texture is S, FS,
						Permeability > 2.
		Slopes > 15%	1.00			Slopes > 15%
4775:						
Petronodic Haplocalcids-	45	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any durat
				Very rare flooding	0.20	
Calcic Petrocalcids-----	40	Limitations		Limitations		Limitations
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Depth to pan < 40
		Depth to thick cemented pan	1.00			Ponded (any durat
						Permeability > 2.
4820:						
Playa------------------	90	Not rated		Not rated		Not rated
5000:						
Copperworld------------	70	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic bedrock < 72"	1.00			Slopes > 15%
						Fragments (<75mm)
Lithic Ustic Haplargids, cool------------------	25	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic bedrock < 72"	1.00			Slopes > 15%
						Fragments (<75mm)

Table 8b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover f
		Limitation	Value	Limitation	Value	Limitatio
5300:						
Lithic Ustic Haplocalcids----------	90	Limitations		Limitations		Limitations
		Slopes > 15%	1.00	Slopes > 15%	1.00	Depth to bedrock
		Lithic or paralithic bedrock < 72"	1.00			Slopes > 15%
		Fragments (3-10") 15-35%	0.14			Calcium carbonat
NOTCOM:						
Soils data not complete-	100	Not rated		Not rated		Not rated

Textures are abbreviated as: C--clay, CL--clay loam, COS--coarse sand, COSL--coarse sandy loam, FS--fine sand, loam, L--loam, LCOS--loamy coarse sand, LFS--loamy fine sand, LS--loamy sand, LVFS--loamy very fine sand, S--sand, S SCL--sandy clay loam, SG--sand and gravel, SI--silt, SIC--silty clay, SICL--silty clay loam, SIL--silt loam, SL--san VFS--very fine sand, and VFSL--very fine sandy loam.

The interpretation for trench sanitary landfill evaluates the following soil properties at varying depths in th ponding, wetness, slope, depth to hard or soft bedrock, depth to a thick or thin cemented pan, fragments 3 to 10 inc sodium content (SAR), pH, clayey or sandy textures, and permeability that is too high, allowing seepage in some clim

The interpretation for area sanitary landfill evaluates the following soil properties at varying depths in the ponding, wetness, slope, depth to bedrock, depth to a cemented pan, and permeability that is too high, allowing seep climates.

The interpretation for daily cover for landfill evaluates the following soil properties at varying depths in th wetness, slope, depth to bedrock, depth to a cemented pan, fragments greater than or less than 3 inches in size, Uni peat (PT), Unified classes for packing (OL, OH, CH, and MH), sandy or clayey textures, pH, carbonates, sodium conten (EC), soil climate, kaolinitic mineralogy, and permeability that is too high, allowing seepage.

Table 9a.--Construction Materials (Part 1)

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. The informa the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value co from 0.00 to 0.99. The closer the value is to 0.0, the greater the potential limitation. Values of 0.0 are absolu based on the soil property criteria used to develop the interpretation. Values closer to 1.0 have less of a limit Features with a value of 1.0 have absolutely no limitation and are not shown in this table. Rating classes are de the most limiting value. Fine-earth fractions are reported on a weight basis. An explanation of the rating criter abbreviations used in describing the limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand		Potential sourc
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class limiting feat
3000:						
Copperworld----------	65	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Slope > 15%
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer is a possible source	0.04	Depth to bedrock
						Rock fragment co
Copperworld, cool---	15	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Slope > 15%
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer is a possible source	0.04	Depth to bedrock
						Rock fragment co
3241:						
Langwell------------	85	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Slope > 15%
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer is a possible source	0.03	Depth to bedrock
						Rock fragment co
3260:						
Straycow------------	40	Fair source		Poor source		Poor source
		Thickest layer possible source	0.12	Bottom layer not a source	0.00	Slope > 15%
		Bottom layer possible source	0.12	Thickest layer not a source	0.00	Rock fragment co
						Depth to bedrock
						Clay 27 to 40%
Newera--------------	35	Fair source		Poor source		Poor source
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer not a source	0.00	Rock fragment co
		Bottom layer possible source	0.12	Thickest layer not a source	0.00	Depth to bedrock
						Slope 8 to 12%
Rubble land---------	10	Not Rated		Not Rated		Not rated

Table 9a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class and limiting features	Value	Potential source of sand: Rating class and limiting features	Value	Potential sour: Rating clas limiting fea
3261:						
Straycow	45	Fair source Thickest layer not a source due to fines or thin layer Bottom layer possible source	 0.00 0.12	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source Slope > 15% Rock fragment c Depth to bedroc Clay 27 to 40%
Highland	25	Poor source Thickest layer not a source due to fines or thin layer Bottom layer not a source	 0.00 0.00	Fair source Thickest layer not a source Bottom layer is a possible source	 0.00 0.03	Poor source Slope > 15% Rock fragment c Depth to bedroc
Straycow, moderately sloping	15	Fair source Thickest layer possible source Bottom layer possible source	 0.12 0.12	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source Rock fragment c Depth to bedroc Slope > 15% Clay 27 to 40%
3310:						
Birdspring	50	Fair source Thickest layer not a source due to fines or thin layer Bottom layer possible source	 0.00 0.38	Poor source Thickest layer not a source Bottom layer is a possible source	 0.00 0.00	Poor source Slope > 15% Rock fragment c Depth to bedroc Calcium carbona
Zeheme	25	Fair source Thickest layer not a source due to fines or thin layer Bottom layer possible source	 0.00 0.12	Fair source Thickest layer not a source Bottom layer is a possible source	 0.00 0.02	Poor source Slope > 15% Rock fragment c Depth to bedroc Calcium carbona Sand fractions null
Rock outcrop	15	Not Rated		Not Rated		Not rated
3320:						
Umberci	65	Poor source Bottom layer not a source Thickest layer not a source due to fines or thin layer	 0.00 0.00	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source Slope > 15% Calcium carbona Rock fragment c Depth to bedroc
Rock outcrop	20	Not Rated		Not Rated		Not rated

Table 9a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class and limiting features	Potential source of gravel: Value	Potential source of sand: Rating class and limiting features	Potential source of sand: Value	Potential sourc: Rating class limiting feat
3412:						
Haleburu------------	60	Fair source Thickest layer not a source due to fines or thin layer Bottom layer possible source	 0.00 0.06	Fair source Thickest layer not a source Bottom layer is a possible source	 0.00 0.04	Poor source Slope > 15% Rock fragment co Depth to bedrock
Haleburu, dry-------	25	Fair source Thickest layer not a source due to fines or thin layer Bottom layer possible source	 0.00 0.06	Fair source Thickest layer not a source Bottom layer is a possible source	 0.00 0.04	Poor source Rock fragment co Depth to bedrock Slope 8 to 12%
3420:						
Hartpeak------------	50	Poor source Thickest layer not a source due to fines or thin layer Bottom layer not a source	 0.00 0.00	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source Slope > 15% Rock fragment co Depth to bedrock
Highland, moist-----	35	Poor source Thickest layer not a source due to fines or thin layer Bottom layer not a source	 0.00 0.00	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source Slope > 15% Rock fragment co Depth to bedrock
3520:						
Arizo loamy sand----	85	Poor source Bottom layer not a source Thickest layer not a source due to fines or thin layer	 0.00 0.00	Fair source Thickest layer possible source Bottom layer is a possible source	 0.75 0.86	Poor source Sand fractions > Rock fragment co Hard to reclaim
3640:						
Tonopah-------------	45	Fair source Thickest layer possible source Bottom layer possible source	 0.12 0.50	Fair source Thickest layer possible source Bottom layer is a possible source	 0.03 0.42	Poor source Sand fractions > Hard to reclaim Rock fragment co SAR 4 to 13
Arizo---------------	40	Fair source Thickest layer not a source due to fines or thin layer Bottom layer possible source	 0.00 0.25	Fair source Thickest layer possible source Bottom layer is a possible source	 0.75 0.82	Poor source Sand fractions > Hard to reclaim Rock fragment co

Table 9a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class and limiting features	Value	Potential source of sand: Rating class and limiting features	Value	Potential sourc[e]: Rating class[...] limiting feat[ures]
3641:						
Tonopah, rarely flooded-----------	80	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Sand fractions >
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer is a possible source	0.18	Rock fragment co
3650:						
Weiser, rarely flood	45	Fair source		Fair source		Poor source
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	Hard to reclaim
		Bottom layer possible source	0.25	Bottom layer is a possible source	0.02	Rock fragment co
						Calcium carbonat
Weiser--------------	40	Fair source		Poor source		Poor source
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer not a source	0.00	Hard to reclaim
		Bottom layer possible source	0.40	Thickest layer not a source	0.00	Rock fragment co
						Calcium carbonat
3660:						
Colosseum, rarely flooded-----------	65	Fair source		Fair source		Poor source
		Bottom layer not a source	0.00	Bottom layer is a possible source	0.04	Sand fractions
		Thickest layer possible source	0.18			Hard to reclaim
				Thickest layer possible source	0.10	Rock fragment co
						Calcium carbonat
Colosseum, very rarely flooded-----	20	Fair source		Fair source		Poor source
		Bottom layer not a source	0.00	Bottom layer is a possible source	0.04	Sand fractions
		Thickest layer possible source	0.18			Hard to reclaim
				Thickest layer possible source	0.10	Rock fragment co
						Calcium carbona
4122:						
Popups-------------	75	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment c
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer possible source	0.05	Depth to pan > data

Table 9a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class and limiting features	Value	Potential source of sand: Rating class and limiting features	Value	Potential sourc[e]: Rating class [and] limiting feat[ures]
4180:						
Peskah	50	Fair source		Fair source		Poor source
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Sand fractions >
		Thickest layer possible source	0.59	Thickest layer possible source	0.12	Hard to reclaim
						Rock fragment co
Arizo	35	Fair source		Fair source		Poor source
		Bottom layer possible source	0.12	Thickest layer possible source	0.03	Sand fractions >
						Hard to reclaim
		Thickest layer possible source	0.37	Bottom layer is a possible source	0.12	Rock fragment co
						SAR 4 to 13
4190:						
Weiser, cool	85	Fair source		Fair source		Poor source
		Thickest layer possible source	0.40	Thickest layer possible source	0.03	Hard to reclaim
						Rock fragment co
		Bottom layer possible source	0.40	Bottom layer is a possible source	0.06	Calcium carbonat
4200:						
Owlshead	95	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Depth to pan < 2
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer is a possible source	0.79	Rock fragment co
						Sand fractions 7
4210:						
Ustidur	85	Fair source		Fair source		Poor source
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	Depth to pan < 2
				Bottom layer is a possible source	0.04	Rock fragment co
		Bottom layer possible source	0.25			Slope > 15%
						Calcium carbonat
4220:						
Minehart	85	Fair source		Fair source		Poor source
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	Hard to reclaim
				Bottom layer is a possible source	0.09	Rock fragment co
		Bottom layer possible source	0.25			Sand fractions 7
4230:						
Hoppswell	55	Fair source		Fair source		Poor source
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	Hard to reclaim
				Bottom layer is a possible source	0.07	Rock fragment co
		Bottom layer possible source	0.25			Sand fractions 7

Table 9a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class and limiting features	Value	Potential source of sand: Rating class and limiting features	Value	Potential sourc[e]: Rating clas[s] limiting fea[t]
4230:						
Ustidur-------------	30	Fair source		Fair source		Poor source
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	Depth to pan <
		Bottom layer possible source	0.25	Bottom layer is a possible source	0.04	Rock fragment c
						Slope > 15%
						Calcium carbona
4703:						
Typic Haplosalids, ponded-------------	85	Poor source		Poor source		Poor source
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	SAR > 13
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	EC > 8 dS/m
4711:						
Bluepoint-----------	55	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Bottom layer is a possible source	0.12	Sand fractions
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer possible source	0.12	Slope 8 to 12%
Petronodic Haplocalcids-------	25	Poor source		Poor source		Poor source
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	SAR > 13
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	Rock fragment c
						EC > 8 dS/m
						Calcium carbona
4760:						
Hypoint, overblown--	45	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Thickest layer possible source	0.04	Sand fractions
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer is a possible source	0.82	
Pipeflat------------	35	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Thickest layer possible source	0.08	Hard to reclaim
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer is a possible source	0.10	Rock fragment c
						Sand fractions
4765:						
Typic Calcigypsids--	55	Not rated		Not rated		Not rated

Table 9a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class and limiting features	Value	Potential source of sand: Rating class and limiting features	Value	Potential sourc[e]: Rating class[...] limiting feat[...]
4765:						
Typic Haplosalids, ponded-------------	25	Poor source Bottom layer not a source Thickest layer not a source due to fines or thin layer	 0.00 0.00	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source SAR > 13 EC > 8 dS/m
4770:						
Haymont-------------	40	Poor source Bottom layer not a source Thickest layer not a source due to fines or thin layer	 0.00 0.00	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source SAR > 13 EC > 8 dS/m Calcium carbonat
Haymont, moist------	30	Poor source Bottom layer not a source Thickest layer not a source due to fines or thin layer	 0.00 0.00	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source SAR > 13 EC > 8 dS/m Calcium carbonat
Bluepoint-----------	20	Poor source Bottom layer not a source Thickest layer not a source due to fines or thin layer	 0.00 0.00	Fair source Thickest layer possible source Bottom layer is a possible source	 0.12 0.28	Poor source Sand fractions > Slope > 15% SAR 4 to 13
4775:						
Petronodic Haplocalcids-------	45	Poor source Bottom layer not a source Thickest layer not a source due to fines or thin layer	 0.00 0.00	Poor source Bottom layer not a source Thickest layer not a source	 0.00 0.00	Poor source SAR > 13 Rock fragment co EC > 8 dS/m Calcium carbonat
Calcic Petrocalcids-	40	Poor source Bottom layer not a source Thickest layer not a source due to fines or thin layer	 0.00 0.00	Fair source Thickest layer possible source Bottom layer is a possible source	 0.01 0.03	Poor source Rock fragment co Calcium carbonat EC > 8 dS/m SAR > 13 Depth to pan 20
4820:						
Playa---------------	90	Not Rated		Not Rated		Not rated

Table 9a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class and limiting features	Potential source of gravel: Value	Potential source of sand: Rating class and limiting features	Potential source of sand: Value	Potential sourc: Rating clas limiting feat
5000:						
Copperworld----------	70	Poor source		Poor source		Poor source
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope > 15%
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	Rock fragment c
						Depth to bedroc
Lithic Ustic Haplargids, cool---	25	Poor source		Fair source		Poor source
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Slope > 15%
		Thickest layer not a source due to fines or thin layer	0.00	Bottom layer is a possible source	0.03	Depth to bedroc
						Rock fragment c
5300:						
Lithic Ustic Haplocalcids--------	90	Poor source		Fair source		Poor source
		Thickest layer not a source due to fines or thin layer	0.00	Thickest layer not a source	0.00	Slope > 15%
		Bottom layer not a source	0.00	Bottom layer is a possible source	0.02	Calcium carbona
						Rock fragment c
						Depth to bedroc
NOTCOM:						
Soils data not complete-----------	100	Not Rated		Not Rated		Not rated

The interpretation for gravel evaluates coarse fragments greater than 0.2 inch in size in the bottom layer or in layer of the soil.

The interpretation for sand evaluates the content of sand and fine gravel in the thickest layer or in the bottom soil. Organic soil layers with a Unified engineering class for peat (PT) are also evaluated.

The interpretation for topsoil evaluates the following soil properties at varying depths: calcium carbonates, con bulk density, content of sand, soil wetness, coarse fragments 0.2 to 3 inches in size, fragments greater than 3 inches content of organic matter (OM), content of sodium expressed as the sodium adsorption ratio (SAR), salinity expressed a electrical conductivity (EC), depth to bedrock, slope, and pH.

Table 9b.--Construction Materials (Part 2)

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Offi
information indicates the dominant soil condition but does not eliminate the need for onsite inves
numbers in the value columns range from 0.00 to 0.99. The closer the value is to 0.0, the greater
limitation. Values of 0.0 are absolute limitations based on the soil property criteria used to dev
interpretation. Values closer to 1.0 have less of a limitation. Features with a value of 1.0 have
limitation and are not shown in this table. Rating classes are determined by the most limiting val
fractions are reported on a weight basis. An explanation of the rating criteria and of the abbrevi
describing the limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential sour roadfill
		Rating class and limiting features	Value	Rating class an limiting feature
3000:				
Copperworld	65	Poor source		Poor source
		WEG = 1 or 2	0.00	Depth to bedrock < 40"
		AWC < 3" to 60" depth	0.00	Slopes > 25%
		OM < .5%	0.00	
Copperworld, cool	15	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
3241:				
Langwell	85	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
3260:				
Straycow	40	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
		Clay 27 to 40%	0.98	LEP 3 to 9
Newera	35	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	LEP 3 to 9
Rubble land	10	Not rated		Not rated
3261:				
Straycow	45	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
		Clay 27 to 40%	0.98	

Table 9b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Potential source of reclamation material: Value	Potential sou roadfil: Rating class a limiting featur
3261:				
Highland----------------------	25	Poor source		Poor source
		OM < .5%	0.00	Depth to bedrock < 40"
		AWC < 3" to 60" depth	0.00	Slopes > 25%
				LEP 3 to 9
Straycow, moderately sloping---	15	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	LEP 3 to 9
		Clay 27 to 40%	0.98	
3310:				
Birdspring--------------------	50	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
		Fragments >10" are 5-15%	0.72	
		Calcium carbonates 15 to 40%	0.92	
Zeheme------------------------	25	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
		Calcium carbonates 15 to 40%	0.68	
		Fragments >10" are 5-15%	0.76	
Rock outcrop------------------	15	Not rated		Not rated
3320:				
Umberci-----------------------	65	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		Calcium carbonates > 40%	0.00	Slopes > 25%
		OM < .5%	0.00	
Rock outcrop------------------	20	Not rated		Not rated
3412:				
Haleburu----------------------	60	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
Haleburu, dry-----------------	25	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	

Table 9b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Potential source of reclamation material: Value	Potential sour[...] roadfill: Rating class an[...] limiting feature[...]
3420:				
Hartpeak------------------------	50	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
		Fragments 3-10" are 25 to 50%	0.89	LEP 3 to 9
Highland, moist----------------	35	Poor source		Poor source
		OM < .5%	0.00	Depth to bedrock < 40"
		AWC < 3" to 60" depth	0.00	Slopes > 25%
				LEP 3 to 9
3520:				
Arizo loamy sand---------------	85	Poor source		Good source
		Sand fractions > 85%	0.00	
		WEG = 1 or 2	0.00	
		OM < .5%	0.00	
		AWC < 3" to 60" depth	0.00	
3640:				
Tonopah------------------------	45	Poor source		Good source
		Sand fractions > 85%	0.00	
		OM < .5%	0.00	
		AWC < 3" to 60" depth	0.00	
		Maximum pH > 8.5	0.00	
		SAR from 4 to 13	0.90	
Arizo--------------------------	40	Poor source		Good source
		Sand fractions > 85%	0.00	
		OM < .5%	0.00	
		AWC 3 - 6" to 60" depth	0.00	
3641:				
Tonopah, rarely flooded--------	80	Poor source		Good source
		Sand fractions > 85%	0.00	
		OM < .5%	0.00	
		AWC 3 - 6" to 60" depth	0.01	
3650:				
Weiser, rarely flooded---------	45	Poor source		Good source
		WEG = 1 or 2	0.00	
		OM < .5%	0.00	
		AWC < 3" to 60" depth	0.00	
		Calcium carbonates 15 to 40%	0.68	

Table 9b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential sou roadfil: Rating class a limiting featur
3650:				
Weiser-------------------------	40	Poor source		Good source
		OM < .5%	0.00	
		AWC < 3" to 60" depth	0.00	
		Calcium carbonates 15 to 40%	0.68	
		Fragments >10" are 5-15%	0.81	
3660:				
Colosseum, rarely flooded------	65	Poor source		Good source
		Sand fractions > 85%	0.00	
		OM < .5%	0.00	
		AWC < 3" to 60" depth	0.00	
		Calcium carbonates > 40%	0.00	
Colosseum, very rarely flooded-	20	Poor source		Good source
		Sand fractions > 85%	0.00	
		WEG = 1 or 2	0.00	
		OM < .5%	0.00	
		AWC < 3" to 60" depth	0.00	
		Calcium carbonates > 40%	0.00	
4122:				
Popups-------------------------	75	Poor source		Poor source
		OM < .5%	0.00	Depth to pan < 40"
		AWC 3 - 6" to 60" depth	0.06	
		Depth to pan > 40" or null data	1.00	
4180:				
Peskah-------------------------	50	Poor source		Fair source
		Sand fractions > 85%	0.00	Depth to pan 40-60"
		AWC < 3" to 60" depth	0.00	
		OM < .5%	0.00	
Arizo--------------------------	35	Poor source		Good source
		Sand fractions > 85%	0.00	
		AWC < 3" to 60" depth	0.00	
		OM < .5%	0.00	
		SAR from 4 to 13	0.78	
4190:				
Weiser, cool-------------------	85	Poor source		Good source
		OM < .5%	0.00	
		Calcium carbonates > 40%	0.00	
		AWC 3 - 6" to 60" depth	0.36	

Table 9b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential sour[ce of] roadfill: Rating class an[d] limiting feature[s]
4200:				
Owlshead	95	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to pan < 40"
		OM < .5%	0.00	
		Depth to pan < 20"	0.00	
4210:				
Ustidur	85	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to pan < 40"
		Depth to pan < 20"	0.00	Slopes 15 to 25%
		Maximum pH > 8.5	0.00	
		OM is .5 to 1%	0.50	
		Calcium carbonates 15 to 40%	0.68	
4220:				
Minehart	85	Poor source		Good source
		OM < .5%	0.00	
		AWC 3 - 6" to 60" depth	0.70	
4230:				
Hoppswell	55	Poor source		Good source
		OM < .5%	0.00	
		AWC 3 - 6" to 60" depth	0.01	
		Sand fractions 75 to 85%	0.68	
Ustidur	30	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to pan < 40"
		Depth to pan < 20"	0.00	
		Maximum pH > 8.5	0.00	
		OM is .5 to 1%	0.50	
		Calcium carbonates 15 to 40%	0.68	
4703:				
Typic Haplosalids, ponded	85	Poor source		Fair source
		WEG = 1 or 2	0.00	AASHTO GIN 5 to 8 (soil
		Maximum pH > 8.5	0.00	LEP 3 to 9
		OM < .5%	0.00	
		EC > 16 dS/m	0.00	
		SAR > 13	0.00	

Table 9b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential sou[rce of] roadfil[l]: Rating class a[nd] limiting featur[es]
4711:				
Bluepoint----------------------	55	Poor source		Good source
		Sand fractions > 85%	0.00	
		WEG = 1 or 2	0.00	
		OM < .5%	0.00	
		AWC 3 - 6" to 60" depth	0.32	
Petronodic Haplocalcids--------	25	Poor source		Poor source
		OM < .5%	0.00	AASHTO GIN > 8 (low so
		SAR > 13	0.00	
		Maximum pH > 8.5	0.00	
		EC 8 to 16 dS/m	0.50	
		Calcium carbonates 15 to 40%	0.54	
		K-factor .10 -.35	0.68	
4760:				
Hypoint, overblown-------------	45	Poor source		Good source
		Sand fractions > 85%	0.00	
		WEG = 1 or 2	0.00	
		OM < .5%	0.00	
		AWC 3 - 6" to 60" depth	0.36	
Pipeflat-----------------------	35	Poor source		Good source
		WEG = 1 or 2	0.00	
		OM < .5%	0.00	
		Sand fractions 75 to 85%	0.50	
		AWC 3 - 6" to 60" depth	0.73	
4765:				
Typic Calcigypsids-------------	55	Not rated		Not rated
Typic Haplosalids, ponded------	25	Poor source		Poor source
		OM < .5%	0.00	AASHTO GIN > 8 (low so
		EC > 16 dS/m	0.00	
		SAR > 13	0.00	
		K-factor .10 -.35	0.37	
4770:				
Haymont------------------------	40	Poor source		Good source
		OM < .5%	0.00	
		EC > 16 dS/m	0.00	
		SAR > 13	0.00	
		Maximum pH > 8.5	0.00	
		K-factor .10 -.35	0.37	
		Calcium carbonates 15 to 40%	0.68	

Table 9b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential sour[ce of] roadfill: Rating class an[d] limiting feature[s]
4770:				
Haymont, moist	30	Poor source		Good source
		OM < .5%	0.00	
		EC > 16 dS/m	0.00	
		SAR > 13	0.00	
		Maximum pH > 8.5	0.00	
		K-factor .10 -.35	0.37	
		Calcium carbonates 15 to 40%	0.68	
Bluepoint	20	Poor source		Fair source
		Sand fractions > 85%	0.00	Slopes 15 to 25%
		WEG = 1 or 2	0.00	
		OM < .5%	0.00	
		AWC 3 - 6" to 60" depth	0.71	
		SAR from 4 to 13	0.78	
4775:				
Petronodic Haplocalcids	45	Poor source		Poor source
		OM < .5%	0.00	AASHTO GIN > 8 (low soi
		SAR > 13	0.00	
		Maximum pH > 8.5	0.00	
		K-factor .10 -.35	0.37	
		EC 8 to 16 dS/m	0.50	
		Calcium carbonates 15 to 40%	0.54	
Calcic Petrocalcids	40	Poor source		Poor source
		OM < .5%	0.00	Depth to pan < 40"
		Calcium carbonates > 40%	0.00	
		Maximum pH > 8.5	0.00	
		SAR > 13	0.00	
		AWC 3 - 6" to 60" depth	0.03	
		Depth to pan 20 to 40"	0.39	
		EC 8 to 16 dS/m	0.88	
4820:				
Playa	90	Not rated		Not rated
5000:				
Copperworld	70	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%

Table 9b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential sou[rce of] roadfil[l]: Rating class a[nd] limiting featur[es]
5000:				
Lithic Ustic Haplargids, cool--	25	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		OM < .5%	0.00	Slopes > 25%
5300:				
Lithic Ustic Haplocalcids------	90	Poor source		Poor source
		AWC < 3" to 60" depth	0.00	Depth to bedrock < 40"
		Calcium carbonates > 40%	0.00	Slopes > 25%
		OM < .5%	0.00	
NOTCOM:				
Soils data not complete--------	100	Not rated		Not rated

The interpretation for reclamation material evaluates the following soil properties at varying de
the content of sand, clay, fragments, and organic matter content (OM); the Wind Erodibility Group (WEG
capacity (AWC); pH; salinity (EC); content of sodium (SAR); carbonates; and susceptibility of the soil
water (K-factor).

The interpretation for roadfill evaluates the following soil properties at varying depths in the
potential expressed as linear extensibility percent (LEP), depth to rock or a cemented pan, wetness, s
strength expressed as AASHTO Group Index Number (AASHTO GIN), and content of fragments.

Table 10.--Water Management

[The information in this table is based on interpretations developed by the Pacific Southwest MLRA Office. The
indicates the dominant soil condition but does not eliminate the need for onsite investigation. The number
columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The rating is
limitation with the highest value. Only the three highest value limitations are listed. There may be more
Fine-earth fractions and coarse fragments are reported on a weight basis. An explanation of the rating cri
abbreviations used in describing the limitations is given at the end of the table]

Map symbol and soil name	Pct. of map unit	Embankments, dikes, and levees		Pond reservoir a
		Limitation	Value	Limitation
3000:				
Copperworld	65	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
				Depth to bedrock < 20"
				Permeability .6-2"/hr (son
Copperworld, cool	15	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
		Possible seepage problem	0.50	Depth to bedrock < 20"
				Permeability .6-2"/hr (son
3241:				
Langwell	85	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
		Seepage problem	1.00	Depth to bedrock < 20"
3260:				
Straycow	40	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
		Shrink-swell (LEP 3-6)	0.78	Depth to bedrock < 20"
Newera	35	Limitations		Limitations
		Thin layer	1.00	Depth to bedrock < 20"
		Shrink-swell (LEP 3-6)	0.50	Slopes > 7%
Rubble land	10	Not rated		Not rated
3261:				
Straycow	45	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
		Shrink-swell (LEP 3-6)	0.78	Depth to bedrock < 20"
Highland	25	Limitations		Limitations
		Thin layer	0.87	Slopes > 7%
		Shrink-swell (LEP 3-6)	0.50	Permeability > 2"/hr (see
				Depth to bedrock from 20-

Table 10.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Embankments, dikes, and levees: Limitation	Embankments, dikes, and levees: Value	Pond reservoir: Limitation
3261:				
Straycow, moderately sloping---	15	Limitations		Limitations
		Thin layer	1.00	Depth to bedrock < 20"
		Shrink-swell (LEP 3-6)	0.78	Slopes > 7%
3310:				
Birdspring--------------------	50	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
				Depth to bedrock < 20"
Zeheme------------------------	25	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
		Fragments (>3") 15-35%	0.64	Depth to bedrock < 20"
				Permeability > 2"/hr (see
Rock outcrop------------------	15	Not rated		Not rated
3320:				
Umberci-----------------------	65	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
				Depth to bedrock < 20"
Rock outcrop------------------	20	Not rated		Not rated
3412:				
Haleburu----------------------	60	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
				Depth to bedrock < 20"
Haleburu, dry-----------------	25	Limitations		Limitations
		Thin layer	1.00	Depth to bedrock < 20"
				Slopes > 7%
3420:				
Hartpeak----------------------	50	Limitations		Limitations
		Thin layer	0.99	Slopes > 7%
		Fragments (>3") 15-35%	0.98	Depth to bedrock < 20"
		Shrink-swell (LEP 3-6)	0.50	
Highland, moist---------------	35	Limitations		Limitations
		Thin layer	0.87	Slopes > 7%
		Shrink-swell (LEP 3-6)	0.50	Permeability > 2"/hr (see
				Depth to bedrock from 20-

Table 10.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Embankments, dikes, and levees		Pond reservoir a
		Limitation	Value	Limitation
3520:				
Arizo loamy sand---------------	85	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
				Slopes 2 to 7%
3640:				
Tonopah------------------------	45	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
		Low piping potential	0.10	Slopes 2 to 7%
Arizo--------------------------	40	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
				Slopes 2 to 7%
3641:				
Tonopah, rarely flooded--------	80	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
				Slopes 2 to 7%
3650:				
Weiser, rarely flooded---------	45	No limitations		Limitations
				Permeability .6-2"/hr (son
				Slopes 2 to 7%
Weiser-------------------------	40	Limitations		Limitations
		Fragments (>3") 15-35%	0.26	Permeability .6-2"/hr (son
				Slopes 2 to 7%
3660:				
Colosseum, rarely flooded------	65	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
Colosseum, very rarely flooded-	20	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
				Slopes 2 to 7%
4122:				
Popups-------------------------	75	Limitations		Limitations
		Thin layer	0.52	Permeability > 2"/hr (seep
				Slopes 2 to 7%
				Depth to pan 20 to 60"
4180:				
Peskah-------------------------	50	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
		Thin layer	0.34	Slopes 2 to 7%
				Depth to pan 20 to 60"

Table 10.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Embankments, dikes, and levees: Limitation	Embankments, dikes, and levees: Value	Pond reservoir: Limitation
4180:				
Arizo------------------------	35	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (see
		Fragments (>3") 15-35%	0.27	Slopes 2 to 7%
		High piping potential	0.22	
4190:				
Weiser, cool------------------	85	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (see
				Slopes 2 to 7%
4200:				
Owlshead----------------------	95	Limitations		Limitations
		Thin layer	1.00	Permeability > 2"/hr (see
		Seepage problem	1.00	Depth to pan < 20"
				Slopes 2 to 7%
4210:				
Ustidur-----------------------	85	Limitations		Limitations
		Thin layer	1.00	Depth to pan < 20"
				Permeability > 2"/hr (see
				Slopes > 7%
4220:				
Minehart----------------------	85	No limitations		Limitations
				Permeability > 2"/hr (see
				Slopes 2 to 7%
4230:				
Hoppswell---------------------	55	No limitations		Limitations
				Permeability > 2"/hr (see
				Slopes 2 to 7%
Ustidur-----------------------	30	Limitations		Limitations
		Thin layer	1.00	Depth to pan < 20"
				Permeability > 2"/hr (see
				Slopes > 7%
4703:				
Typic Haplosalids, ponded------	85	Limitations		Limitations
		Ponded (any duration)	1.00	Permeability .6-2"/hr (se
		EC > 16 dS/m	1.00	
		Very high piping potential	1.00	

Table 10.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Embankments, dikes, and levees		Pond reservoir a
		Limitation	Value	Limitation
4711:				
Bluepoint---------------------	55	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
				Slopes > 7%
Petronodic Haplocalcids--------	25	Limitations		No limitations
		Very high piping potential	1.00	
		EC 8-16 dS/m	0.50	
4760:				
Hypoint, overblown-------------	45	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
Pipeflat-----------------------	35	Limitations		Limitations
		Seepage problem	1.00	Permeability > 2"/hr (seep
4765:				
Typic Calcigypsids-------------	55	Not rated		Limitations
				Gypsum >15% to 80" depth
			1.00	Permeability .6-2"/hr (sor
Typic Haplosalids, ponded------	25	Limitations		No limitations
		Ponded (any duration)	1.00	
		EC > 16 dS/m	1.00	
		Very high piping potential	1.00	
4770:				
Haymont------------------------	40	Limitations		Limitations
		EC > 16 dS/m	1.00	Permeability .6-2"/hr (sor
		Very high piping potential	1.00	
Haymont, moist-----------------	30	Limitations		Limitations
		EC > 16 dS/m	1.00	Permeability .6-2"/hr (sor
		Very high piping potential	1.00	
Bluepoint----------------------	20	Limitations		Limitations
		Possible seepage problem	0.50	Permeability > 2"/hr (see
		High piping potential	0.22	Slopes > 7%
4775:				
Petronodic Haplocalcids--------	45	Limitations		No limitations
		Ponded (any duration)	1.00	
		Very high piping potential	1.00	
		EC 8-16 dS/m	0.50	

Table 10.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Embankments, dikes, and levees		Pond reservoir
		Limitation	Value	Limitation
4775:				
Calcic Petrocalcids------------	40	Limitations		Limitations
		Ponded (any duration)	1.00	Permeability > 2"/hr (see
		Very high piping potential	1.00	Depth to pan 20 to 60"
		Thin layer	0.90	
4820:				
Playa--------------------------	90	Not rated		Not rated
5000:				
Copperworld--------------------	70	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
				Depth to bedrock < 20"
				Permeability .6-2"/hr (sc
Lithic Ustic Haplargids, cool--	25	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
				Depth to bedrock < 20"
				Permeability .6-2"/hr (sc
5300:				
Lithic Ustic Haplocalcids------	90	Limitations		Limitations
		Thin layer	1.00	Slopes > 7%
		Fragments (>3") 15-35%	0.14	Depth to bedrock < 20"
				Permeability > 2"/hr (see
NOTCOM:				
Soils data not complete--------	100	Not rated		Not rated

The interpretation for embankments, dikes, and levees evaluates the following soil properties at varying soil: ponding; wetness; depth to a restrictive layer; fragments greater than 3 inches in size; salinity (EC); for a high content of organic matter (PT, OL, and OH); Unified classes that are hard to pack (MH and CH); perm too high, allowing seepage; and piping as determined by liquid limit (LL), plasticity index (PI), content of s content of gypsum.

The interpretation for pond reservoir areas evaluates the following soil properties at varying depths in depth to hard or soft bedrock, depth to a cemented pan, marly textures, content of gypsum, and permeability th allowing seepage.

Table 11.--Engineering Properties

[Absence of an entry indicates that the data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200
	In				*Pct*	*Pct*				
3000:										
Copperworld---------------	0-1	Gravelly sandy loam	SM, SC-SM	A-2-4, A-4	0-1	0-8	78-90	56-80	42-60	21-3
	1-6	Gravelly sandy loam, sandy loam	SC-SM, SC	A-2-4, A-6	0-1	0-7	71-100	49-91	37-75	18-4
	6-16	Bedrock	---	---	---	---	---	---	---	---
Copperworld, cool---------	0-1	Gravelly sandy loam	SM, SC-SM	A-2-4, A-4	0-1	0-8	78-97	56-92	42-73	21-3
	1-6	Gravelly sandy loam, sandy loam	SC-SM, SC	A-2-4, A-6	0-1	0-7	71-100	49-91	37-75	18-4
	6-16	Bedrock	---	---	---	---	---	---	---	---
3241:										
Langwell-----------------	0-2	Gravelly loamy sand	SC-SM	A-1-b, A-2-4	0	0-5	73-97	52-90	41-73	11-2
	2-5	Gravelly sandy loam, sandy loam	SC-SM	A-1-b, A-2-4	0	0-8	78-95	55-84	43-67	22-3
	5-15	Bedrock	---	---	---	---	---	---	---	---
3260:										
Straycow-----------------	0-3	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2	0-3	35-55	50-65	45-55	40-50	25-4
	3-19	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2	0	0-10	40-60	30-50	27-45	20-3
	19-29	Bedrock	---	---	---	---	---	---	---	---

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200
	In				Pct	Pct				
3260:										
Newera-------------------	0-3	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2	0-3	35-45	50-65	45-55	40-50	25-
	3-12	Very gravelly sandy clay loam, very gravelly loam, very gravelly clay loam, extremely gravelly sandy clay loam	GC	A-2	0-5	0-5	30-55	20-50	15-45	10-
	12-22	Bedrock	---	---	---	---	---	---	---	--
Rubble land--------------	0-60	Boulders	GW, GP	A-1	30-65	30-65	0-10	0-5	0-5	[illegible]
3261:										
Straycow-----------------	0-2	Extremely gravelly sandy loam	GP-GC, GW-GC	A-2	0-2	0-15	25-35	10-25	7-18	4-
	2-7	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2	0	0-10	40-60	30-50	27-45	20-
	7-20	Bedrock	---	---	---	---	---	---	---	--
Highland-----------------	0-3	Extremely gravelly loam	GP-GC, GC	A-1, A-2	0-5	15-38	20-30	10-20	5-20	5-
	3-13	Very cobbly loam, very gravelly loam	GC, SC	A-2, A-6	0-5	25-45	50-70	40-60	35-50	30-
	13-26	Very gravelly loam, very gravelly clay loam	GC	A-2, A-6	0-5	0-10	40-60	30-50	25-45	20-
	26-30	Very gravelly sandy loam	GC-GM	A-1, A-2	0-5	0-10	40-55	35-50	25-40	15-
	30-40	Bedrock	---	---	---	---	---	---	---	--

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200
	In				*Pct*	*Pct*				
3261:										
Straycow, moderately sloping	0-2	Very gravelly loam	GC	A-2	0-5	0-15	50-70	30-50	25-40	20-3
	2-19	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2	0	0-10	40-60	30-50	27-45	20-3
	19-29	Bedrock	---	---	---	---	---	---	---	---
3310:										
Birdspring	0-3	Extremely stony loam	GM	A-2, A-1	25-45	8-30	25-45	20-40	18-35	15-3
	3-9	Very gravelly fine sandy loam, extremely gravelly fine sandy loam, very gravelly silt loam, extremely gravelly silt loam	GM	A-1	0-5	0-14	20-40	15-35	10-30	10-2
	9-19	Bedrock	---	---	---	---	---	---	---	---
Zeheme	0-4	Extremely stony fine sandy loam	GM	A-1	25-40	15-30	25-50	20-45	15-40	10-2
	4-13	Very gravelly fine sandy loam, very gravelly sandy loam	GM	A-1, A-2	0	5-25	35-55	30-50	20-40	15-3
	13-23	Bedrock	---	---	---	---	---	---	---	---
Rock outcrop.										

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	20
	In				*Pct*	*Pct*				
3320:										
Umberci------------------	0-0	Gravelly sandy loam	SC-SM, SC	A-2-4, A-1-a	1-2	1-9	66-83	41-72	30-57	15-
	0-5	Very gravelly fine sandy loam, very gravelly sandy loam	SC-SM, SC	A-1-b	0	1-16	53-65	26-58	22-52	12-
	5-15	Bedrock	---	---	---	---	---	---	---	--
Rock outcrop.										
3412:										
Haleburu-----------------	0-2	Extremely gravelly sandy loam	GP-GC	A-1	0-10	0-20	15-35	10-25	7-20	5-
	2-11	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam	GM, GC-GM, SP-SM, SM	A-1, A-2	0-5	0-15	35-60	30-50	20-40	12-
	11-21	Bedrock	---	---	---	---	---	---	---	--
Haleburu, dry------------	0-2	Extremely gravelly sandy loam	GP-GC	A-1	0-10	0-20	15-35	10-25	7-20	5-
	2-11	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam	GM, GC-GM, SP-SM, SM	A-1, A-2	0-5	0-15	35-60	30-50	20-40	12-
	11-21	Bedrock	---	---	---	---	---	---	---	--

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200
	In				Pct	Pct				
3420:										
Hartpeak	0-2	Extremely cobbly loam	GC, GC-GM	A-2-4, A-1-b	0-15	30-45	25-45	20-40	18-35	14-2
	2-6	Very cobbly silt loam, very cobbly loam, extremely cobbly loam, extremely cobbly silt loam	GC-GM, GC	A-4, A-2-4	0-10	23-45	35-65	30-60	27-57	20-4
	6-22	Very cobbly clay loam, very cobbly loam, extremely cobbly loam, extremely cobbly clay loam	GC	A-2-6, A-2-7, A-6, A-7	0-10	23-45	35-65	30-60	27-57	20-4
	22-31	Bedrock	---	---	---	---	---	---	---	---
Highland, moist	0-2	Extremely gravelly loam	GP-GC, GC	A-1, A-2	0-5	15-38	20-30	10-20	5-20	5-1
	2-14	Extremely gravelly sandy loam, very gravelly sandy loam	GC, GW-GC, GC-GM	A-1, A-2	0-5	0-15	20-45	15-40	10-25	5-1
	14-30	Very gravelly loam, very gravelly clay loam	GC	A-2, A-6	0-5	0-10	40-60	30-50	25-45	20-4
	30-39	Bedrock	---	---	---	---	---	---	---	---

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	20
	In				Pct	Pct				
3520:										
Arizo loamy sand----------	0-1	Loamy sand	SC-SM, SM	A-1-b, A-2-4	0	0	73-97	53-92	39-74	9-
	1-56	Stratified extremely gravelly coarse sand to very gravelly loamy sand, very gravelly sand	SC-SM, SW-SM, GW	A-1-a, A-2-4, A-1-b	0	2-8	68-72	35-53	27-44	2-
	56-61	Coarse sand, gravelly coarse sand	SW-SM	A-1-b	0	0	78-98	56-97	24-44	4-
3640:										
Tonopah------------------	0-1	Extremely gravelly sandy loam	GP, GP-GC, GP-GM	A-1, A-2	0	0-5	20-35	10-25	5-15	0-
	1-9	Very gravelly sandy loam, extremely gravelly sandy loam	GW-GC, GC-GM, GC, GP-GC	A-1, A-2	0-5	0-15	25-55	15-45	10-30	5-
	9-60	Extremely gravelly sand, very gravelly loamy sand, very gravelly sand, extremely gravelly loamy sand	GP, GW	A-1	0	0-30	20-45	10-35	5-20	0-
Arizo--------------------	0-2	Very gravelly loamy sand	GM, GP-GM, SM, SP-SM	A-1	0-5	0-15	40-60	30-50	15-30	5-
	2-6	Sand	SP-SM	A-2	0	0	85-100	80-100	40-70	5-
	6-60	Stratified very gravelly coarse sand to extremely gravelly sand	GP-GM, SP-SM, SP, GP, GW	A-1	0-5	0-25	25-55	10-45	5-30	0-

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200
	In				Pct	Pct				
3641:										
Tonopah, rarely flooded---	0-2	Fine sandy loam	SC-SM	A-2-4, A-4	0	0-1	92	76-84	66-81	30-4
	2-18	Gravelly fine sandy loam, very gravelly sandy loam	SC-SM	A-2-4	0	0-3	61-87	41-80	35-76	16-3
	18-39	Extremely gravelly sand, very gravelly loamy sand, very gravelly sand, extremely gravelly loamy sand	SW-SC	A-2-4	0	0-7	57-66	27-59	19-48	3-1
3650:										
Weiser, rarely flooded----	0-1	Very gravelly fine sandy loam	SC-SM	A-1-b, A-2-4, A-1-a	0-7	0-5	39-58	30-55	24-47	6-2
	1-60	Extremely gravelly fine sandy loam, very gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam, very gravelly fine sandy loam, extremely gravelly loam	GP-GC, GM	A-1-b, A-1-a, A-2-4	0-17	1-25	30-52	6-39	5-34	2-2

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	20
	In				Pct	Pct				
3650:										
Weiser-------------------	0-6	Gravelly loam	SC	A-6	0	0-1	71-84	57-76	44-67	30-
	6-60	Extremely gravelly fine sandy loam, very gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam, very gravelly fine sandy loam, extremely gravelly loam	GW-GC, GP-GM, GC-GM, GM	A-1-a, A-2-4	0-17	5-25	30-52	6-38	5-33	3-
3660:										
Colosseum, rarely flooded-	0-1	Fine sandy loam	SC-SM	A-2-4	0	0	89-97	76-91	68-86	25-
	1-4	Very gravelly loamy sand, extremely gravelly loamy sand	GW-GM, SM	A-1-b	0	0	44-84	21-54	16-41	4-
	4-45	Extremely gravelly loamy sand, very gravelly loamy sand	GW-GM	A-1-a	0	0-6	43-68	14-54	10-42	3-
	45-59	Very gravelly fine sandy loam, extremely gravelly sandy loam, extremely gravelly loamy sand	GW-GC, SM	A-1-b	0	0-3	45-68	22-49	19-45	7-

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200
	In				Pct	Pct				
3660:										
Colosseum, very rarely flooded------------------	0-1	Gravelly fine sandy loam	SC-SM	A-2-4	0	0	71-77	57-72	50-66	18-2
	1-4	Very gravelly loamy sand, extremely gravelly loamy sand	GW-GM, SM	A-1-b	0	0	44-84	21-54	16-41	4-1
	4-45	Extremely gravelly loamy sand, very gravelly loamy sand	GW-GM	A-1-a	0	0-6	43-68	14-54	10-42	3-1
	45-59	Very gravelly fine sandy loam, extremely gravelly sandy loam, extremely gravelly loamy sand	GW-GC, SM	A-1-b	0	0-3	45-68	22-49	19-45	7-1
4122:										
Popups--------------------	0-1	Sandy loam	GP-GM, GM	A-1-b, A-2-4	0	0	89-92	81-87	61-69	31-3
	1-4	Gravelly sandy loam, sandy loam	SM	A-2-4	0	0	70-92	63-88	46-70	21-3
	4-10	Gravelly sandy loam, gravelly sandy clay loam	SC-SM	A-2-4	0	0	85-92	70-84	45-65	19-3
	10-39	Sandy loam, gravelly coarse sandy loam	SC-SM	A-2-4	0	0	73-92	47-84	29-59	17-3
	39-61	Duripan	---	---	---	---	---	---	---	---

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	20
	In				Pct	Pct				
4180:										
Peskah	0-1	Extremely gravelly fine sandy loam	GP, GP-GC	A-2	0-8	0-15	15-30	10-25	5-20	0-
	1-4	Gravelly sandy loam, very gravelly fine sandy loam, gravelly fine sandy loam, very gravelly sandy loam	SC, GC-GM, GC, SC-SM	A-2	0-5	0-5	45-80	35-75	25-45	15-
	4-8	Gravelly sandy clay loam, gravelly sandy loam	SC, SC-SM, GC, GC-GM	A-2	0	0-10	60-80	50-75	20-45	15-
	8-15	Very gravelly sandy loam, very gravelly sandy clay loam	GC, GC-GM	A-2	0	0-5	35-55	30-50	15-40	10-
	15-43	Stratified very gravelly sandy loam to extremely gravelly coarse sand	GP, GP-GM	A-1	0-5	0-15	15-30	10-25	5-15	0-
	43-60	Cemented material	---	---	---	---	---	---	---	--
Arizo	0-6	Extremely gravelly sandy loam	GP, GP-GC, GP-GM	A-1, A-2	0-5	0-15	20-35	10-25	5-15	0-
	6-60	Stratified extremely gravelly loamy sand to cobbly coarse sand	GP, GP-GM	A-1	0-5	5-30	35-55	20-50	10-30	0-

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200
	In				Pct	Pct				
4190:										
Weiser, cool--------------	0-2	Sandy loam	SC-SM, SC	A-2-4, A-1-b, A-4	0	0-1	85-95	77-92	56-72	26-3
	2-27	Extremely gravelly sandy loam, extremely gravelly fine sandy loam, very gravelly fine sandy loam	GW-GC, GW, SC-SM	A-1-a, A-2-4	0	1-29	34-59	7-52	5-41	2-2
	27-45	Extremely gravelly sandy loam, very gravelly sandy loam	GW-GC	A-1-b, A-1-a, A-2-4	0	2-30	34-49	7-42	5-31	2-1
	45-61	Extremely gravelly loamy fine sand, extremely gravelly sandy loam	GW-GC	A-1-a, A-2-4	0	2-9	27-41	6-28	6-27	2-9
4200:										
Owlshead------------------	0-2	Loam	SC	A-4	0	0-3	84-92	76-88	59-78	31-4
	2-6	Gravelly fine sandy loam, sandy loam	SC-SM, SC	A-2-4	0	0-1	78-96	57-85	50-84	22-4
	6-13	Very gravelly fine sandy loam, extremely gravelly sandy loam	SC, SC-SM	A-2-4	0	0-3	54-59	19-47	17-46	7-2
	13-41	Cemented material	---	---	---	---	---	---	---	---
	41-59	Extremely gravelly sand, very gravelly sand, very gravelly loamy sand	SP-SM	A-1-b	0	0-2	52-67	10-54	7-38	3-8

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	20
	In				Pct	Pct				
4210:										
Ustidur------------------	0-2	Extremely gravelly sandy loam	GP-GC, GP	A-1, A-2-4	0-5	0-10	15-30	10-25	5-15	0-
	2-10	Extremely gravelly sandy loam, very gravelly sandy loam	GC, GW-GC, GC-GM	A-1, A-2-4	0-5	0-15	20-45	15-40	10-25	5-
	10-38	Cemented material	---	---	---	---	---	---	---	--
	38-60	Extremely gravelly sandy loam, extremely gravelly loamy sand	GP, GW-GM	A-1-a	0-5	0-15	20-35	10-25	5-15	0-
4220:										
Minehart-----------------	0-3	Gravelly fine sandy loam	SC-SM, SC, GC, GC-GM	A-2-4, A-4	0-5	0-5	70-95	60-90	45-75	25-
	3-13	Gravelly loam, loam, gravelly sandy clay loam, sandy clay loam	CL-ML, CL, SC, GC	A-4, A-6	0-5	0-5	70-95	60-90	55-80	40-
	13-20	Clay loam, gravelly clay loam, clay, gravelly clay	CL, CH	A-7	0-5	0-5	70-98	70-95	65-95	50-
	20-60	Extremely gravelly coarse sandy loam, very gravelly coarse sandy loam, extremely gravelly sandy loam, very gravelly sandy loam	GP-GC, SP-SC, SC, GC	A-2-4, A-2-6	0-5	0-10	30-60	15-45	10-30	5-

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200
	In				Pct	Pct				
4230:										
Hoppswell-----------------	0-2	Extremely gravelly sandy loam	GM, GW-GM, GP-GM	A-1	0-8	0-12	20-35	10-25	10-20	5-1
	2-15	Very gravelly sandy clay loam	GC, SC	A-2	0	0	45-65	25-50	15-40	10-3
	15-64	Stratified extremely gravelly coarse sand to very gravelly sandy loam	GM, GP-GM	A-1	0-5	0-5	35-50	20-35	10-20	5-1
Ustidur-------------------	0-2	Extremely gravelly sandy loam	GP-GC, GP	A-1, A-2	0-5	0-10	15-30	10-25	5-15	0-1
	2-6	Extremely gravelly sandy loam, very gravelly sandy loam	GC, GW-GC, GC-GM	A-1, A-2	0-5	0-15	20-45	15-40	10-25	5-1
	6-38	Cemented material	---	---	---	---	---	---	---	---
	38-60	Extremely gravelly sandy loam, extremely gravelly loamy sand	GP, GW-GM	A-1	0-5	0-15	20-35	10-25	5-15	0-1
4703:										
Typic Haplosalids, ponded-	0-1	Clay loam	CL	A-6, A-7	0	0	100	100	86-92	67-7
	1-8	Clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	86-96	67-7
	8-59	Loam, silty clay loam, sandy loam	CL, CL-ML	A-4, A-6	0	0	100	100	81-89	58-6
4711:										
Bluepoint-----------------	0-0	Fine sand	SM	A-2-4	0	0	100	100	95-99	19-2
	0-59	Fine sand, loamy fine sand	SM	A-2-4	0	0	100	100	95-99	19-2

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	20
	In				Pct	Pct				
4711:										
Petronodic Haplocalcids---	0-0	Fine sandy loam	SC-SM	A-4, A-2-4	0	0	100	92-100	83-97	33-
	0-4	Silt loam	ML, CL	A-4	0	0	100	85-100	72-99	60-
	4-23	Silty clay loam, fine sandy loam, very gravelly loamy fine sand	SM, CL, SC-SM	A-6, A-1-b	0	0	81-100	32-100	24-98	20-
	23-59	Silty clay loam, silt loam	CL	A-6	0	0	92-100	76-91	68-91	61-
4760:										
Hypoint, overblown--------	0-2	Loamy fine sand	SM	A-2-4	0	0	98-100	95-100	88-95	26-
	2-6	Loamy fine sand	SM	A-2-4	0	0	100	90-100	84-94	25-
	6-24	Loamy fine sand	SM	A-2-4	0	0-2	100	90-100	84-95	25-
	24-40	Very gravelly sand	SP, SP-SM	A-1-a, A-1-b	0	0-16	52-73	25-59	19-47	2-
	40-63	Sand	SP-SM	A-3	0	0-2	96-98	80-92	57-73	6-
Pipeflat-----------------	0-10	Loamy fine sand	SM	A-2-4	0	0	100	92-97	85-95	26-
	10-25	Gravelly loamy sand	SM	A-2-4	0	0-10	77-92	65-85	52-71	17-
	25-35	Gravelly sandy loam	SC-SM	A-2-4	0	0	85-92	70-75	52-65	22-
	35-61	Very gravelly loamy sand	SP-SM	A-1-b	0	0	55-85	30-45	16-34	4-
4765:										
Typic Calcigypsids--------	0-7	Gypsiferous material	---	---	0	0	---	---	---	--
	7-28	Gypsiferous material	---	---	0	0	---	---	---	--
	28-71	Gypsiferous material, gypsiferous sandy loam	---	---	0	0	---	---	---	--

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200
	In				Pct	Pct				
4765:										
Typic Haplosalids, ponded-	0-1	Gypsiferous silt loam	CL	A-6	0	0	100	100	99-100	87-9
	1-8	Gypsiferous silty clay loam, silt loam	CL	A-6	0	0	100	100	98-100	93-1
	8-28	Silt loam, gypsiferous silty clay loam	CL	A-6	0	0	100	100	100	97-1
	28-59	Silty clay loam, gypsiferous silty clay	CL	A-6	0	0	100	100	99-100	96-1
4770:										
Haymont------------------	0-2	Loam	ML, CL-ML	A-4	0	0	100	92-100	80-95	60-8
	2-13	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	92-100	85-100	65-9
	13-29	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	92-100	85-100	65-9
	29-60	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	92-100	85-100	65-9
Haymont, moist-----------	0-2	Loam	ML, CL-ML	A-4	0	0	100	92-100	80-95	60-8
	2-13	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	92-100	85-100	65-9
	13-29	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	92-100	85-100	65-9
	29-60	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	92-100	85-100	65-9
Bluepoint----------------	0-14	Fine sand	SM	A-2, A-4	0	0	90-100	80-100	60-80	15-4
	14-60	Fine sand, loamy fine sand, loamy sand, sand	SM	A-2, A-4	0	0	90-100	80-100	60-80	15-4

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	20
	In				Pct	Pct				
4775:										
Petronodic Haplocalcids---	0-0	Silt loam	CL, ML	A-4	0	0	100	100	90-99	78-
	0-4	Silt loam	ML, CL	A-4	0	0	100	85-100	72-99	60-
	4-23	Silty clay loam, fine sandy loam, very gravelly loamy fine sand	SM, CL, SC-SM	A-6, A-1-b	0	0	81-100	32-100	24-98	20-
	23-59	Silty clay loam, silt loam	CL	A-6	0	0	92-100	76-91	68-91	61-
Calcic Petrocalcids-------	0-2	Fine sandy loam	SC-SM	A-2-4	0	0	98-100	92-97	82-88	33-
	2-6	Fine sandy loam	SC-SM	A-4	0	0	94-100	89-98	74-87	39-
	6-16	Gravelly sandy loam, sandy loam	SC-SM	A-2-4	0	0	76-92	47-77	34-58	13-
	16-28	Sandy loam, loam	SC-SM	A-2-4	0	0	56-71	37-65	27-50	14-
	>28	Cemented material	---	---	---	---	---	---	---	--
4820:										
Playa--------------------	0-6	Silty clay loam	CH, CL, MH, ML	A-7	0	0	100	100	100	90-
	6-60	Silty clay loam, clay, silty clay	CH, CL, MH	A-7	0	0	100	100	100	90-
5000:										
Copperworld--------------	0-1	Gravelly sandy loam	SM, SC-SM	A-2-4, A-4	0-1	0-8	78-90	56-80	42-60	21-
	1-7	Very gravelly sandy clay loam, very gravelly sandy loam	SC, SC-SM	A-2-6, A-2-4	0	0	69-73	37-52	26-47	13-
	7-17	Bedrock	---	---	---	---	---	---	---	--

Table 11.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200
	In				*Pct*	*Pct*				
5000:										
Lithic Ustic Haplargids, cool----------------------	0-1	Loamy sand	SM	A-2-4	0	0	94-100	79-98	62-78	19-2
	1-10	Gravelly sandy loam	SC-SM	A-2-4	0	0	73-98	52-84	39-64	18-3
	10-15	Very gravelly sandy loam	SC-SM	A-2-4	0	0-9	70-73	40-52	31-43	16-2
	15-25	Bedrock	---	---	---	---	---	---	---	---
5300:										
Lithic Ustic Haplocalcids-	0-1	Gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4	0	13-16	61-87	49-75	37-58	18-3
	1-6	Very gravelly sandy loam	SC-SM	A-2-4, A-1-b	0	13-16	61-87	49-75	38-59	19-3
	6-15	Very gravelly sandy loam	SC-SM, GC-GM	A-1-b, A-1-a, A-2-4	0	23-33	42-66	31-66	24-52	12-2
	15-24	Bedrock	---	---	---	---	---	---	---	---
NOTCOM:										
Soils data not complete.										

Table 12.--Erosion Properties of the Soils

[Entries under "Erosion factors" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer]

Map symbol and soil name	Depth	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
		Kw	Kf	T		
	In					
3000:						
Copperworld	0-1	.24	.37	1	2	134
	1-6	.20	.32			
	6-16	---	---			
Copperworld, cool	0-1	.24	.37	1	3	86
	1-6	.20	.32			
	6-16	---	---			
3241:						
Langwell	0-2	.15	.32	1	3	86
	2-5	.17	.37			
	5-15	---	---			
3260:						
Straycow	0-3	.17	.43	2	7	38
	3-19	.10	.28			
	19-29	---	---			
Newera	0-3	.17	.43	1	7	38
	3-12	.10	.24			
	12-22	---	---			
Rubble land.						
3261:						
Straycow	0-2	.05	.32	2	8	0
	2-7	.10	.28			
	7-20	---	---			
Highland	0-3	.05	.37	2	8	0
	3-13	.15	.43			
	13-26	.15	.37			
	26-30	.15	.37			
	30-40	---	---			
Straycow, moderately sloping	0-2	.10	.37	2	7	38
	2-19	.10	.28			
	19-29	---	---			
3310:						
Birdspring	0-3	.05	.43	1	8	0
	3-9	.15	.55			
	9-19	---	---			
Zeheme	0-4	.05	.28	1	8	0
	4-13	.10	.28			
	13-23	---	---			
Rock outcrop.						
3320:						
Umberci	0-0	.15	.37	1	3	86
	0-5	.05	.43			
	5-15	---	---			
Rock outcrop.						

Table 12.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodibility group	Wind erodibility index
		Kw	Kf	T		
	In					
3412:						
Haleburu	0-2	.02	.24	1	8	0
	2-11	.05	.20			
	11-21	---	---			
Haleburu, dry	0-2	.02	.24	1	8	0
	2-11	.05	.20			
	11-21	---	---			
3420:						
Hartpeak	0-2	.05	.32	2	8	0
	2-6	.17	.43			
	6-22	.17	.43			
	22-31	---	---			
Highland, moist	0-2	.05	.32	2	8	0
	2-14	.10	.24			
	14-30	.10	.32			
	30-39	---	---			
3520:						
Arizo loamy sand	0-1	.15	.15	5	1	180
	1-56	.05	.10			
	56-61	.10	.10			
3640:						
Tonopah	0-1	.05	.32	5	8	0
	1-9	.10	.32			
	9-60	.10	.20			
Arizo	0-2	.05	.24	5	3	86
	2-6	.10	.15			
	6-60	.10	.32			
3641:						
Tonopah, rarely flooded	0-2	.24	.32	5	3	86
	2-18	.20	.28			
	18-39	.05	.10			
3650:						
Weiser, rarely flooded	0-1	.15	.37	5	2	134
	1-60	.10	.28			
Weiser	0-6	.24	.37	5	4L	86
	6-60	.02	.28			
3660:						
Colosseum, rarely flooded	0-1	.20	.24	5	3	86
	1-4	.10	.20			
	4-45	.02	.20			
	45-59	.05	.24			
Colosseum, very rarely flooded	0-1	.15	.28	5	2	134
	1-4	.10	.20			
	4-45	.02	.20			
	45-59	.05	.24			
4122:						
Popups	0-1	.05	.17	3	3	86
	1-4	.05	.15			
	4-10	.05	.10			
	10-39	.05	.10			
	39-61	---	---			

Table 12.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodibility group	Wind erodibility index
		Kw	Kf	T		
	In					
180:						
Peskah	0-1	.02	.24	2	8	0
	1-4	.20	.28			
	4-8	.10	.15			
	8-15	.05	.15			
	15-43	.02	.15			
	43-60	---	---			
Arizo	0-6	.05	.32	5	8	0
	6-60	.10	.32			
4190:						
Weiser, cool	0-2	.20	.24	5	3	86
	2-27	.05	.24			
	27-45	.05	.15			
	45-61	.02	.15			
4200:						
Owlshead	0-2	.32	.43	1	5	56
	2-6	.24	.43			
	6-13	.10	.32			
	13-41	---	---			
	41-59	.02	.05			
4210:						
Ustidur	0-2	.05	.32	1	8	0
	2-10	.10	.32			
	10-38	.02	.02			
	38-60	.05	.28			
4220:						
Minehart	0-3	.28	.43	5	4	86
	3-13	.28	.49			
	13-20	.24	.32			
	20-60	.02	.15			
4230:						
Hoppswell	0-2	.05	.32	5	8	0
	2-15	.10	.24			
	15-64	.05	.24			
Ustidur	0-2	.02	.20	1	8	0
	2-6	.05	.20			
	6-38	---	---			
	38-60	.05	.24			
4703:						
Typic Haplosalids, ponded	0-1	.28	.32	5	2	134
	1-8	.28	.32			
	8-59	.24	.28			
4711:						
Bluepoint	0-0	.24	.24	5	1	220
	0-59	.24	.24			
Petronodic Haplocalcids	0-0	.37	.43	5	3	86
	0-4	.49	.49			
	4-23	.28	.43			
	23-59	.37	.43			

Table 12.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
		Kw	Kf	T		
	In					
4760:						
Hypoint, overblown	0-2	.32	.32	5	2	134
	2-6	.28	.32			
	6-24	.28	.32			
	24-40	.02	.10			
	40-63	.05	.10			
Pipeflat	0-10	.28	.32	3	2	134
	10-25	.15	.24			
	25-35	.17	.24			
	35-61	.05	.20			
4765:						
Typic Calcigypsids	0-7	---	---	2	4	86
	7-28	---	---			
	28-71	---	---			
Typic Haplosalids, ponded	0-1	.55	.55	2	4L	86
	1-8	.55	.55			
	8-28	.55	.55			
	28-59	.49	.49			
4770:						
Haymont	0-2	.43	.43	5	4L	86
	2-13	.55	.55			
	13-29	.55	.55			
	29-60	.55	.55			
Haymont, moist	0-2	.43	.43	5	4L	86
	2-13	.55	.55			
	13-29	.55	.55			
	29-60	.55	.55			
Bluepoint	0-14	.17	.17	5	1	250
	14-60	.17	.17			
4775:						
Petronodic Haplocalcids	0-0	.55	.55	2	4L	86
	0-4	.55	.55			
	4-23	.28	.49			
	23-59	.43	.49			
Calcic Petrocalcids	0-2	.28	.28	2	3	86
	2-6	.32	.32			
	6-16	.10	.20			
	16-28	.15	.32			
	>28	---	---			
4820:						
Playa	0-6	.37	.37	---	4L	86
	6-60	.37	.37			
5000:						
Copperworld	0-1	.24	.37	1	3	86
	1-7	.10	.20			
	7-17	---	---			
Lithic Ustic Haplargids, cool	0-1	.20	.24	1	3	86
	1-10	.17	.28			
	10-15	.10	.24			
	15-25	---	---			

Table 12.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
		Kw	Kf	T		
	In					
5300:						
Lithic Ustic Haplocalcids-------	0-1	.15	.37	1	4	86
	1-6	.15	.37			
	6-15	.10	.37			
	15-24	---	---			
NOTCOM:						
Soils data not complete.						

Table 13.--Physical Properties of the Soils

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter
	In	Pct	g/cc	µm/sec	In/in	Pct	Pct
3000:							
Copperworld------------------	0-1	7-11	1.45-1.65	10.00-100.00	0.07-0.12	0.0-3.0	0.0-0.5
	1-6	11-18	1.40-1.55	10.00-100.00	0.07-0.16	0.0-3.0	0.0-0.2
	6-16	---	---	1.00-10.00	0.00-0.00	---	---
Copperworld, cool------------	0-1	7-11	1.45-1.65	10.00-100.00	0.07-0.12	0.0-3.0	0.0-0.5
	1-6	11-18	1.40-1.55	10.00-100.00	0.07-0.16	0.0-3.0	0.0-0.2
	6-16	---	---	1.00-10.00	0.00-0.00	---	---
3241:							
Langwell---------------------	0-2	6-7	1.55-1.65	50.00-100.00	0.04-0.09	0.0-3.0	0.0-0.5
	2-5	9-12	1.45-1.55	10.00-100.00	0.07-0.12	0.0-3.0	0.0-0.2
	5-15	---	---	0.01-0.10	0.00-0.00	---	---
3260:							
Straycow---------------------	0-3	12-24	1.15-1.25	4.00-14.00	0.05-0.08	1.5-4.0	0.5-1.0
	3-19	27-35	1.30-1.50	1.40-4.00	0.08-0.13	4.5-6.0	0.0-0.5
	19-29	---	---	0.42-1.40	---	---	---
Newera-----------------------	0-3	12-24	1.15-1.25	4.00-14.00	0.05-0.08	1.5-4.0	0.5-1.0
	3-12	18-35	1.40-1.60	1.40-14.00	0.04-0.13	3.0-5.9	0.0-0.5
	12-22	---	---	0.00-0.01	---	---	---
Rubble land------------------	0-60	0-0	1.70-2.35	141.00-705.00	0.00-0.10	0.0-2.9	0.0-0.1
3261:							
Straycow---------------------	0-2	12-20	1.35-1.55	14.00-42.00	0.03-0.05	2.0-3.0	0.0-0.5
	2-7	27-35	1.30-1.50	1.40-4.00	0.08-0.13	4.5-6.0	0.0-0.5
	7-20	---	---	0.42-1.40	---	---	---
Highland---------------------	0-3	8-16	1.30-1.40	4.00-14.00	0.03-0.07	0.0-2.9	0.0-0.5
	3-13	18-27	1.30-1.50	4.00-14.00	0.07-0.11	3.0-5.8	0.0-0.5
	13-26	18-35	1.20-1.40	1.40-14.00	0.07-0.13	3.0-6.0	0.0-0.5
	26-30	6-12	1.35-1.55	14.00-42.00	0.06-0.08	0.0-2.9	0.0-0.5
	30-40	---	---	0.00-0.01	---	---	---
Straycow, moderately sloping-	0-2	12-24	1.35-1.55	4.00-14.00	0.06-0.12	1.5-4.0	0.5-1.0
	2-19	27-35	1.30-1.50	1.40-4.00	0.08-0.13	4.5-6.0	0.0-0.5
	19-29	---	---	0.42-1.40	---	---	---
3310:							
Birdspring-------------------	0-3	8-15	1.35-1.40	4.00-14.00	0.05-0.10	0.0-2.9	0.0-0.5
	3-9	6-12	1.40-1.60	14.00-42.00	0.04-0.07	0.0-2.9	0.0-0.5
	9-19	---	---	0.00-0.01	---	---	---
Zeheme-----------------------	0-4	8-18	1.35-1.40	14.00-42.00	0.05-0.10	0.0-2.9	0.0-0.5
	4-13	8-18	1.45-1.55	14.00-42.00	0.05-0.10	0.0-2.9	0.0-0.5
	13-23	---	---	0.00-0.01	---	---	---
Rock outcrop.							
3320:							
Umberci----------------------	0-0	8-14	1.45-1.65	14.00-42.00	0.05-0.13	0.0-3.0	0.0-0.5
	0-5	8-14	1.45-1.55	14.00-42.00	0.03-0.11	0.0-3.0	0.0-0.2
	5-15	---	---	0.00-1.00	0.00-0.00	---	---
Rock outcrop.							
3412:							
Haleburu---------------------	0-2	6-12	1.50-1.70	14.00-42.00	0.03-0.04	0.0-2.9	0.0-0.5
	2-11	6-18	1.50-1.70	14.00-42.00	0.05-0.07	0.0-2.9	0.0-0.5
	11-21	---	---	0.00-0.01	---	---	---

Table 13.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter
	In	*Pct*	*g/cc*	*µm/sec*	*In/in*	*Pct*	*Pct*
3412:							
Haleburu, dry----------------	0-2	6-12	1.50-1.70	14.00-42.00	0.03-0.04	0.0-2.9	0.0-0.5
	2-11	6-18	1.50-1.70	14.00-42.00	0.05-0.07	0.0-2.9	0.0-0.5
	11-21	---	---	0.00-0.01	---	---	---
3420:							
Hartpeak---------------------	0-2	8-15	1.25-1.35	1.00-10.00	0.06-0.11	0.0-3.0	0.2-0.8
	2-6	8-15	1.25-1.35	1.00-10.00	0.06-0.11	0.0-3.0	0.0-0.5
	6-22	25-35	1.35-1.50	0.10-5.00	0.06-0.13	3.0-6.0	0.0-0.5
	22-31	---	---	0.01-0.07	0.00-0.00	---	---
Highland, moist--------------	0-2	8-16	1.30-1.40	4.00-14.00	0.03-0.07	0.0-2.9	0.0-0.5
	2-14	8-18	1.55-1.75	14.00-42.00	0.03-0.07	0.0-2.9	0.5-1.0
	14-30	18-35	1.20-1.40	1.40-14.00	0.07-0.13	3.0-6.0	0.0-0.5
	30-39	---	---	0.00-0.01	0.00-0.00	---	---
3520:							
Arizo loamy sand-------------	0-1	2-8	1.55-1.70	10.00-100.00	0.03-0.08	0.0-2.9	0.0-0.5
	1-56	1-9	1.50-1.70	10.00-100.00	0.03-0.05	0.0-2.9	0.0-0.2
	56-61	1-3	1.70-1.80	10.00-100.00	0.03-0.07	0.0-2.9	0.0-0.2
3640:							
Tonopah----------------------	0-1	5-15	1.55-1.70	14.00-42.00	0.03-0.05	0.0-2.9	0.0-0.5
	1-9	6-15	1.55-1.70	14.00-42.00	0.04-0.09	0.0-2.9	0.0-0.5
	9-60	2-10	1.55-1.75	141.00-705.00	0.03-0.05	0.0-2.9	0.0-0.5
Arizo------------------------	0-2	2-8	1.45-1.65	42.00-141.00	0.04-0.06	0.0-2.0	0.0-0.5
	2-6	2-8	1.45-1.65	42.00-141.00	0.04-0.08	0.0-2.0	0.0-0.5
	6-60	0-5	1.45-1.65	141.00-705.00	0.03-0.06	0.0-2.0	0.0-0.5
3641:							
Tonopah, rarely flooded------	0-2	5-15	1.45-1.55	14.00-42.00	0.13-0.15	0.0-2.9	0.0-0.5
	2-18	6-15	1.50-1.60	14.00-42.00	0.12-0.14	0.0-2.9	0.0-0.5
	18-39	2-10	1.60-1.70	141.00-705.00	0.03-0.05	0.0-2.9	0.0-0.5
3650:							
Weiser, rarely flooded-------	0-1	8-18	1.40-1.50	14.00-100.00	0.03-0.05	0.0-2.9	0.1-0.5
	1-60	6-18	1.30-1.50	4.00-100.00	0.02-0.06	0.0-2.9	0.0-0.5
Weiser-----------------------	0-6	8-18	1.45-1.55	1.00-10.00	0.03-0.05	0.0-2.9	0.1-0.5
	6-60	6-18	1.30-1.50	4.00-10.00	0.02-0.06	0.0-2.9	0.0-0.5
3660:							
Colosseum, rarely flooded----	0-1	8-12	1.45-1.55	10.00-100.00	0.11-0.14	0.0-3.0	0.0-0.5
	1-4	2-8	1.60-1.70	10.00-100.00	0.02-0.07	0.0-3.0	0.0-0.2
	4-45	2-7	1.60-1.70	10.00-100.00	0.01-0.05	0.0-3.0	0.0-0.2
	45-59	4-10	1.65-1.75	10.00-100.00	0.04-0.11	0.0-3.0	0.0-0.2
Colosseum, very rarely flooded--------------------	0-1	8-12	1.45-1.55	10.00-100.00	0.09-0.12	0.0-3.0	0.0-0.2
	1-4	2-8	1.60-1.70	10.00-100.00	0.02-0.07	0.0-3.0	0.0-0.2
	4-45	2-7	1.60-1.70	10.00-100.00	0.01-0.05	0.0-3.0	0.0-0.2
	45-59	4-10	1.65-1.75	10.00-100.00	0.04-0.11	0.0-3.0	0.0-0.2
4122:							
Popups-----------------------	0-1	8-12	1.45-1.55	14.00-42.00	0.05-0.08	0.0-3.0	0.0-0.5
	1-4	8-15	1.45-1.55	14.00-42.00	0.07-0.11	0.0-3.0	0.0-0.2
	4-10	10-23	1.50-1.60	14.00-42.00	0.07-0.11	0.0-3.0	0.0-0.2
	10-39	10-18	1.50-1.60	14.00-42.00	0.07-0.11	0.0-3.0	0.0-0.2
	39-61	---	---	0.01-0.10	0.00-0.00	---	---

Table 13.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter
	In	*Pct*	*g/cc*	*µm/sec*	*In/in*	*Pct*	*Pct*
4180:							
Peskah	0-1	8-18	1.50-1.70	14.00-42.00	0.03-0.05	0.0-2.9	0.2-0.5
	1-4	8-18	1.50-1.70	14.00-42.00	0.06-0.12	0.0-2.9	0.2-0.5
	4-8	18-35	1.40-1.60	1.00-4.00	0.09-0.10	3.0-5.9	0.0-0.5
	8-15	18-35	1.40-1.60	1.00-4.00	0.06-0.07	3.0-5.9	0.0-0.5
	15-43	5-15	1.55-1.75	42.00-141.00	0.03-0.05	0.0-2.9	0.0-0.5
	43-60	---	---	0.01-0.42	---	---	---
Arizo	0-6	5-15	1.55-1.70	14.00-42.00	0.03-0.05	0.0-2.9	0.0-0.5
	6-60	1-6	1.45-1.65	42.00-705.00	0.03-0.04	0.0-2.0	0.0-0.5
4190:							
Weiser, cool	0-2	8-14	1.50-1.60	4.00-141.00	0.07-0.11	0.0-3.0	0.0-0.5
	2-27	6-10	1.50-1.70	14.00-42.00	0.02-0.13	0.0-3.0	0.0-0.2
	27-45	6-10	1.50-1.70	14.00-141.00	0.01-0.11	0.0-3.0	0.0-0.2
	45-61	6-9	1.50-1.70	10.00-100.00	0.01-0.11	0.0-3.0	0.0-0.2
4200:							
Owlshead	0-2	8-18	1.45-1.55	10.00-100.00	0.13-0.17	0.0-3.0	0.0-0.5
	2-6	8-18	1.45-1.55	10.00-100.00	0.09-0.13	0.0-3.0	0.0-0.5
	6-13	8-18	1.50-1.60	10.00-100.00	0.07-0.12	0.0-3.0	0.0-0.5
	13-41	---	---	0.01-0.50	0.00-0.00	---	---
	41-59	2-6	1.60-1.70	80.00-100.00	0.03-0.05	0.0-3.0	0.0-0.5
4210:							
Ustidur	0-2	8-18	1.40-1.60	14.00-42.00	0.03-0.05	0.0-2.9	0.5-1.0
	2-10	8-18	1.55-1.75	14.00-42.00	0.03-0.07	0.0-2.9	0.5-1.0
	10-38	---	---	0.42-1.40	0.00-0.00	---	---
	38-60	4-12	1.30-1.50	14.00-141.00	0.03-0.05	0.0-2.9	0.0-0.5
4220:							
Minehart	0-3	7-15	1.30-1.50	5.00-50.00	0.09-0.14	0.0-2.9	0.5-1.0
	3-13	12-27	1.30-1.50	1.00-10.00	0.11-0.17	1.5-4.5	0.2-0.8
	13-20	27-45	1.30-1.50	0.11-1.00	0.12-0.18	4.5-7.5	0.2-0.8
	20-60	8-18	1.30-1.50	10.00-50.00	0.03-0.09	0.0-2.9	0.0-0.5
4230:							
Hoppswell	0-2	8-15	1.25-1.45	14.00-42.00	0.02-0.04	0.0-2.9	0.2-0.8
	2-15	20-30	1.35-1.55	1.40-4.00	0.06-0.12	3.0-5.9	0.2-0.8
	15-64	3-12	1.50-1.70	14.00-42.00	0.02-0.05	0.0-2.9	0.0-0.5
Ustidur	0-2	8-18	1.40-1.60	14.00-42.00	0.03-0.05	0.0-2.9	0.5-1.0
	2-6	8-18	1.55-1.75	14.00-42.00	0.03-0.07	0.0-2.9	0.5-1.0
	6-38	---	---	0.42-1.40	---	---	---
	38-60	4-12	1.30-1.50	14.00-141.00	0.03-0.05	0.0-2.9	0.0-0.5
4703:							
Typic Haplosalids, ponded	0-1	25-31	1.40-1.50	0.10-1.00	0.17-0.21	3.0-6.0	0.0-0.0
	1-8	25-35	1.40-1.50	0.10-1.00	0.17-0.21	3.0-6.0	0.0-0.0
	8-59	14-22	1.45-1.65	1.00-10.00	0.14-0.18	3.0-6.0	0.0-0.0
4711:							
Bluepoint	0-0	2-6	1.60-1.70	44.00-100.00	0.05-0.08	0.0-3.0	0.0-0.2
	0-59	2-6	1.60-1.70	44.00-100.00	0.05-0.08	0.0-3.0	0.0-0.2
Petronodic Haplocalcids	0-0	7-14	1.45-1.55	10.00-100.00	0.15-0.20	0.0-3.0	0.0-0.5
	0-4	6-16	1.35-1.45	1.00-10.00	0.14-0.17	0.0-3.0	0.0-0.2
	4-23	6-28	1.45-1.55	0.10-1.00	0.07-0.09	0.0-3.0	0.0-0.2
	23-59	20-30	1.45-1.55	0.10-1.00	0.13-0.16	0.0-3.0	0.0-0.2

Table 13.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter
	In	*Pct*	*g/cc*	*µm/sec*	*In/in*	*Pct*	*Pct*
4760:							
Hypoint, overblown----------	0-2	2-6	1.55-1.65	10.00-100.00	0.08-0.11	0.0-3.0	0.0-0.2
	2-6	2-6	1.55-1.65	10.00-100.00	0.07-0.11	0.0-3.0	0.0-0.2
	6-24	2-6	1.55-1.65	10.00-100.00	0.07-0.11	0.0-3.0	0.0-0.2
	24-40	2-6	1.60-1.70	10.00-100.00	0.02-0.05	0.0-3.0	0.0-0.2
	40-63	2-6	1.60-1.70	10.00-100.00	0.04-0.07	0.0-3.0	0.0-0.2
Pipeflat--------------------	0-10	2-6	1.55-1.65	10.00-100.00	0.08-0.11	0.0-3.0	0.0-0.2
	10-25	2-6	1.55-1.65	10.00-100.00	0.08-0.11	0.0-3.0	0.0-0.2
	25-35	8-12	1.50-1.60	10.00-100.00	0.08-0.11	0.0-3.0	0.0-0.2
	35-61	2-6	1.60-1.70	10.00-100.00	0.03-0.06	0.0-3.0	0.0-0.2
4765:							
Typic Calcigypsids----------	0-7	---	---	1.00-10.00	0.01-0.03	---	---
	7-28	---	---	1.00-10.00	0.01-0.03	---	---
	28-71	---	---	1.00-10.00	0.01-0.03	---	---
Typic Haplosalids, ponded----	0-1	20-27	1.35-1.45	0.10-1.00	0.15-0.20	0.0-3.0	0.0-0.1
	1-8	20-33	1.45-1.55	0.10-1.00	0.15-0.20	0.0-3.0	0.0-0.1
	8-28	20-35	1.45-1.55	0.10-1.00	0.15-0.20	0.0-3.0	0.0-0.1
	28-59	30-45	1.45-1.55	0.10-1.00	0.15-0.20	0.0-3.0	0.0-0.1
4770:							
Haymont---------------------	0-2	8-18	1.20-1.30	4.00-14.00	0.14-0.18	0.0-2.9	0.0-0.5
	2-13	5-18	1.10-1.25	4.00-14.00	0.14-0.18	0.0-2.9	0.0-0.5
	13-29	5-18	1.15-1.25	4.00-14.00	0.12-0.16	0.0-2.9	0.0-0.5
	29-60	5-18	1.15-1.25	4.00-14.00	0.14-0.18	0.0-2.9	0.0-0.5
Haymont, moist--------------	0-2	8-18	1.20-1.30	4.00-14.00	0.14-0.18	0.0-2.9	0.0-0.5
	2-13	5-18	1.10-1.25	4.00-14.00	0.14-0.18	0.0-2.9	0.0-0.5
	13-29	5-18	1.15-1.25	4.00-14.00	0.12-0.16	0.0-2.9	0.0-0.5
	29-60	5-18	1.15-1.25	4.00-14.00	0.14-0.18	0.0-2.9	0.0-0.5
Bluepoint-------------------	0-14	2-6	1.45-1.65	42.00-141.00	0.05-0.10	0.0-2.0	0.0-0.5
	14-60	2-6	1.50-1.65	42.00-141.00	0.05-0.10	0.0-2.0	0.0-0.5
4775:							
Petronodic Haplocalcids------	0-0	7-14	1.35-1.45	1.00-10.00	0.14-0.17	0.0-3.0	0.0-0.5
	0-4	6-16	1.35-1.45	1.00-10.00	0.14-0.17	0.0-3.0	0.0-0.2
	4-23	6-28	1.45-1.55	0.10-1.00	0.07-0.09	0.0-3.0	0.0-0.2
	23-59	20-30	1.45-1.55	0.10-1.00	0.13-0.16	0.0-3.0	0.0-0.2
Calcic Petrocalcids----------	0-2	8-10	1.60-1.70	1.00-10.00	0.13-0.15	0.0-3.0	0.0-0.2
	2-6	8-14	1.60-1.70	1.00-10.00	0.13-0.15	0.0-3.0	0.0-0.2
	6-16	8-12	1.50-1.60	10.00-100.00	0.09-0.11	0.0-3.0	0.0-0.2
	16-28	8-12	1.50-1.60	10.00-100.00	0.10-0.13	0.0-3.0	0.0-0.2
	>28	---	---	0.00-0.01	0.00-0.00	---	---
4820:							
Playa-----------------------	0-6	27-40	1.50-1.70	0.01-0.42	0.02-0.04	6.0-8.9	0.0-0.1
	6-60	35-70	1.60-1.80	0.01-0.42	0.02-0.04	6.0-8.9	0.0-0.1
5000:							
Copperworld-----------------	0-1	7-11	1.45-1.65	10.00-100.00	0.07-0.12	0.0-3.0	0.0-0.5
	1-7	10-30	1.45-1.60	1.00-10.00	0.05-0.12	0.0-3.0	0.0-0.2
	7-17	---	---	1.00-10.00	0.00-0.00	---	---
Lithic Ustic Haplargids, cool	0-1	6-8	1.60-1.70	10.00-100.00	0.05-0.08	0.0-3.0	0.0-0.5
	1-10	6-8	1.50-1.60	10.00-100.00	0.07-0.12	0.0-3.0	0.0-0.2
	10-15	12-18	1.50-1.60	10.00-100.00	0.06-0.09	0.0-3.0	0.0-0.2
	15-25	---	---	0.10-1.00	0.00-0.01	---	---

Table 13.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter
	In	*Pct*	*g/cc*	*µm/sec*	*In/in*	*Pct*	*Pct*
5300:							
Lithic Ustic Haplocalcids----	0-1	8-10	1.45-1.55	10.00-100.00	0.10-0.13	0.0-3.0	0.0-0.5
	1-6	9-11	1.50-1.60	10.00-100.00	0.10-0.13	0.0-3.0	0.0-0.2
	6-15	10-12	1.50-1.60	10.00-100.00	0.10-0.13	0.0-3.0	0.0-0.2
	15-24	---	---	0.50-1.00	0.00-0.00	---	---
NOTCOM:							
Soils data not complete.							

Table 14.--Chemical Properties of the Soils

[Soil properties are measured or inferred from direct observations in the field or laboratory. Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	*meq/100g*	*pH*	*Pct*	*Pct*	*dS/m*	
3000:							
Copperworld	0-1	5.5-9.4	7.2-8.0	0-1	0	0	0
	1-6	8.3-14	7.0-7.8	0-1	0	0	0
	6-16	---	---	---	---	---	---
Copperworld, cool	0-1	5.5-9.4	7.2-8.0	0-1	0	0	0
	1-6	8.3-14	7.0-7.8	0-1	0	0	0
	6-16	---	---	---	---	---	---
3241:							
Langwell	0-2	4.8-6.3	7.4-8.0	1-5	0	0	0-1
	2-5	6.9-9.9	7.6-8.0	1-5	0	0	0-1
	5-15	---	---	---	---	---	---
3260:							
Straycow	0-3	10-20	6.6-7.8	0	0	0.0-4.0	0
	3-19	19-27	6.6-7.3	0	0	0	0-5
	19-29	---	---	---	---	---	---
Newera	0-3	10-20	6.6-7.8	0	0	0.0-4.0	0
	3-12	13-27	7.4-8.4	0	0	0	0
	12-22	---	---	---	---	---	---
Rubble land.							
3261:							
Straycow	0-2	8.9-16	6.6-7.3	0	0	0	0-5
	2-7	19-27	6.6-7.3	0	0	0	0-5
	7-20	---	---	---	---	---	---
Highland	0-3	6.2-13	7.4-7.8	0-2	0	0.0-2.0	0-5
	3-13	13-21	7.4-8.4	1-5	0	0.0-2.0	0-5
	13-26	13-27	7.9-8.4	1-5	0	0.0-2.0	0-5
	26-30	4.8-10	7.9-8.4	1-10	0	0.0-2.0	0-5
	30-40	---	---	---	---	---	---
Straycow, moderately sloping	0-2	10-20	7.4-7.8	0	0	0	0
	2-19	19-27	6.6-7.3	0	0	0	0-5
	19-29	---	---	---	---	---	---
3310:							
Birdspring	0-3	2.4-9.5	7.9-8.4	15-25	0	0.0-2.0	0-5
	3-9	1.9-7.9	7.9-8.4	15-25	0	0.0-2.0	0-5
	9-19	---	---	---	---	---	---
Zeheme	0-4	2.4-11	7.9-8.4	15-30	0	0.0-2.0	0-2
	4-13	2.4-11	7.9-8.4	20-40	0	0.0-2.0	0-5
	13-23	---	---	---	---	---	---
Rock outcrop.							
3320:							
Umberci	0-0	2.2-7.3	8.2-8.4	50-65	0	0.0-2.0	0-1
	0-5	2.2-6.2	8.2-8.4	50-65	0	0.0-2.0	0-1
	5-15	---	---	---	---	---	---
Rock outcrop.							

Table 14.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	dS/m	
3412:							
Haleburu	0-2	4.8-10	7.9-9.0	0-5	0	0.0-2.0	0-5
	2-11	4.8-15	7.9-9.0	0-10	0	0.0-2.0	0-5
	11-21	---	---	---	---	---	---
Haleburu, dry	0-2	4.8-10	7.9-9.0	0-5	0	0.0-2.0	0-5
	2-11	4.8-15	7.9-9.0	0-10	0	0.0-2.0	0-5
	11-21	---	---	---	---	---	---
3420:							
Hartpeak	0-2	6.9-13	6.6-7.8	0	0	0.0-2.0	0-5
	2-6	6.2-12	6.6-7.8	0	0	0.0-2.0	0-5
	6-22	17-27	7.4-8.4	0-1	0	0.0-2.0	0-5
	22-31	---	---	---	---	---	---
Highland, moist	0-2	6.2-13	7.4-7.8	0-2	0	0.0-2.0	0-5
	2-14	7.1-15	7.9-9.0	1-5	0	0	0
	14-30	13-27	7.9-8.4	1-10	0	0.0-2.0	0-5
	30-39	---	---	---	---	---	---
3520:							
Arizo loamy sand	0-1	1.4-6.1	7.6-8.2	0-5	0	0.0-2.0	0-1
	1-56	0.8-6.4	7.6-8.4	0-5	0	0.0-2.0	0-1
	56-61	0.8-2.4	7.6-8.4	0-5	0	0.0-2.0	0-1
3640:							
Tonopah	0-1	4.0-11	7.9-9.0	1-10	0	0.0-2.0	0-5
	1-9	4.6-11	7.9-9.0	1-10	0	0.0-2.0	0-5
	9-60	1.9-8.1	8.5-9.0	10-40	0	0.0-4.0	0-12
Arizo	0-2	1.4-6.1	7.4-9.0	0-5	0	0.0-2.0	1-5
	2-6	1.4-6.1	7.9-8.4	0-5	0	0.0-2.0	1-5
	6-60	0.0-4.0	7.9-9.0	1-5	0	0.0-2.0	1-5
3641:							
Tonopah, rarely flooded	0-2	4.0-11	7.9-8.4	1-10	0	0.0-2.0	0-5
	2-18	4.6-11	7.9-8.4	1-10	0	0.0-2.0	0-5
	18-39	1.9-8.1	8.4-8.4	10-40	0	0.0-4.0	0-12
3650:							
Weiser, rarely flooded	0-1	2.4-11	7.9-8.4	10-20	0	0.0-2.0	0-5
	1-60	1.6-9.5	7.9-9.0	20-40	0	0.0-2.0	0-5
Weiser	0-6	3.8-11	7.9-8.4	10-20	0	0.0-2.0	0-5
	6-60	1.6-9.5	7.9-9.0	20-40	0	0.0-2.0	0-5
3660:							
Colosseum, rarely flooded	0-1	2.4-7.9	8.0-8.4	1-5	0	0	0
	1-4	0.8-4.7	8.0-8.4	10-30	0	0	0
	4-45	0.8-4.2	8.0-8.4	25-45	0-2	0	0
	45-59	1.4-5.7	8.0-8.4	10-35	0-1	0.0-10.0	0-20
Colosseum, very rarely flooded	0-1	2.4-6.6	8.0-8.4	5-10	0	0	0
	1-4	0.8-4.7	8.0-8.4	10-30	0	0	0
	4-45	0.8-4.2	8.0-8.4	25-45	0-2	0	0
	45-59	1.4-5.7	8.0-8.4	10-35	0-1	0.0-10.0	0-20

Table 14.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	*meq/100g*	*pH*	*Pct*	*Pct*	*dS/m*	
4122:							
Popups-------------------------	0-1	4.0-7.0	7.6-8.0	0-1	0	0	0
	1-4	5.0-10	7.6-8.2	0-1	0	0	0
	4-10	5.0-10	7.4-8.4	1-5	0	0	0
	10-39	5.0-10	7.4-8.4	1-5	0	0	0
	39-61	---	---	---	---	---	---
4180:							
Peskah-------------------------	0-1	6.8-15	7.9-8.4	0-5	0	0.0-2.0	0-5
	1-4	6.8-15	7.9-8.4	0-5	0	0.0-2.0	0-5
	4-8	13-27	7.9-8.4	0-5	0	0.0-2.0	0-5
	8-15	13-27	7.9-8.4	0-10	0	0.0-2.0	0-5
	15-43	4.1-12	7.9-8.4	0-10	0	0.0-2.0	0-5
	43-60	---	---	---	---	---	---
Arizo--------------------------	0-6	3.1-11	7.9-8.4	1-10	0	0.0-2.0	0-5
	6-60	0.8-4.7	7.4-8.4	1-10	0	0.0-2.0	1-12
4190:							
Weiser, cool-------------------	0-2	2.4-9.0	8.2-8.4	30-40	0	0.0-2.0	0-1
	2-27	1.9-5.7	8.3-8.4	36-46	0	0.0-2.0	0-1
	27-45	1.9-5.7	8.3-8.6	36-47	0	0.0-2.0	0-1
	45-61	1.9-5.2	8.3-8.6	36-47	0	0.0-2.0	0-1
4200:							
Owlshead-----------------------	0-2	6.2-15	8.0-8.4	1-5	0	0.0-4.0	0-5
	2-6	6.2-15	8.0-8.4	1-10	0	0.0-4.0	0-5
	6-13	6.2-15	8.0-8.4	7-25	0	0.0-4.0	0-5
	13-41	---	---	---	---	---	---
	41-59	1.8-5.5	8.0-8.4	1-10	0	0.0-8.0	0-12
4210:							
Ustidur------------------------	0-2	7.1-15	7.9-9.0	10-20	0	0	0
	2-10	7.1-15	7.9-9.0	20-30	0	0	0
	10-38	---	---	---	---	---	---
	38-60	3.3-10	7.9-9.0	1-15	0	0	0
4220:							
Minehart-----------------------	0-3	6.3-13	7.4-7.8	0	0	0.0-2.0	0-1
	3-13	9.9-22	7.4-7.8	0	0	0.0-2.0	0-1
	13-20	21-34	7.4-8.4	0	0	0.0-2.0	0-1
	20-60	6.2-15	7.4-8.4	0-5	0	0.0-2.0	0-1
4230:							
Hoppswell----------------------	0-2	6.9-13	7.9-8.4	0	0	0.0-2.0	0
	2-15	16-24	7.9-8.4	0	0	0.0-2.0	0
	15-64	2.6-10	7.9-9.0	1-10	0	0.0-2.0	0
Ustidur------------------------	0-2	7.1-15	7.9-9.0	10-20	0	0	0
	2-6	7.1-15	7.9-9.0	20-30	0	0	0
	6-38	---	---	---	---	---	---
	38-60	3.3-10	7.9-9.0	1-15	0	0	0
4703:							
Typic Haplosalids, ponded------	0-1	17-21	8.4-9.6	0-5	0	6.1-44.1	23-111
	1-8	17-23	8.8-9.6	0-5	0	37.3-56.1	162-246
	8-59	10-15	8.8-9.6	0-5	0	62.5-111.0	275-493
4711:							
Bluepoint----------------------	0-0	1.4-4.5	7.4-8.2	0-1	0	0	0
	0-59	1.4-4.5	7.4-8.2	0-1	0-7	0	0

Table 14.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	*meq/100g*	*pH*	*Pct*	*Pct*	*dS/m*	
4711:							
Petronodic Haplocalcids--------	0-0	5.5-11	8.2-8.6	5-10	0-1	0.0-2.0	0-5
	0-4	4.8-12	8.4-8.8	15-30	0-1	4.0-8.0	5-13
	4-23	4.8-20	8.4-8.8	15-30	0-1	4.0-16.0	13-99
	23-59	14-21	8.4-8.8	5-10	0-1	4.0-16.0	13-99
4760:							
Hypoint, overblown-------------	0-2	1.4-3.8	7.4-7.8	0-1	0	0	0
	2-6	1.4-3.8	7.4-7.8	0-1	0	0	0
	6-24	0.9-3.5	7.4-7.8	0-5	0	0	0
	24-40	0.8-2.0	7.9-8.4	1-5	0	0	0
	40-63	0.8-0.9	7.9-8.4	1-5	0	0	0
Pipeflat-----------------------	0-10	1.8-5.3	7.9-8.4	0-1	0	0	0
	10-25	1.8-5.3	7.9-8.4	0-1	0	0	0
	25-35	6.2-9.9	7.9-8.4	1	0	0	0
	35-61	1.8-5.3	7.9-8.4	0-10	0	0	0
4765:							
Typic Calcigypsids-------------	0-7	---	7.8-8.4	5-10	25-65	0.0-4.0	0-1
	7-28	---	7.8-8.4	10-20	25-95	0.0-4.0	0-1
	28-71	---	7.8-8.4	5-10	40-80	4.0-8.0	0-2
Typic Haplosalids, ponded------	0-1	14-20	7.8-8.2	1-10	0-40	40.0-484.0	35-385
	1-8	14-24	7.8-8.2	1-10	0-30	40.0-180.0	40-200
	8-28	14-25	7.8-8.2	1-10	0-30	40.0-165.0	40-200
	28-59	20-31	7.8-8.2	1-10	0-30	40.0-165.0	40-200
4770:							
Haymont------------------------	0-2	6.2-15	7.9-9.0	15-35	0	8.0-16.0	13-45
	2-13	4.1-15	8.5-9.5	15-35	0	8.0-16.0	13-45
	13-29	4.1-15	8.5-9.5	15-35	0-2	16.0-32.0	13-45
	29-60	4.1-15	8.5-9.5	15-35	0-2	16.0-32.0	13-45
Haymont, moist-----------------	0-2	6.2-15	7.9-9.0	15-35	0	8.0-16.0	13-45
	2-13	4.1-15	8.5-9.5	15-35	0	8.0-16.0	13-45
	13-29	4.1-15	8.5-9.5	15-35	0-2	16.0-32.0	13-45
	29-60	4.1-15	8.5-9.5	15-35	0-2	16.0-32.0	13-45
Bluepoint----------------------	0-14	1.4-4.7	7.4-9.0	0-5	0-2	0.0-2.0	1-5
	14-60	1.4-4.7	7.4-9.0	0-5	0-2	0.0-4.0	1-12
4775:							
Petronodic Haplocalcids--------	0-0	5.5-11	8.4-8.8	5-10	0-1	0.0-2.0	0-5
	0-4	4.8-12	8.4-8.8	15-30	0-1	4.0-8.0	5-13
	4-23	4.8-20	8.4-8.8	15-30	0-1	4.0-16.0	13-99
	23-59	14-21	8.4-8.8	5-10	0-1	4.0-16.0	13-99
Calcic Petrocalcids------------	0-2	2.4-5.7	7.9-9.0	1-5	0	0.0-2.0	0-5
	2-6	2.4-7.1	8.2-8.8	5-15	0	0.0-2.0	0-5
	6-16	2.4-5.7	8.0-8.8	15-25	0	0.0-7.0	0-20
	16-28	2.2-5.0	8.0-8.8	30-60	0	6.0-12.0	0-37
	>28	---	---	---	---	---	---
4820:							
Playa--------------------------	0-6	---	8.5-9.0	1-10	1-10	4.0-16.0	13-45
	6-60	---	8.5-9.0	1-10	1-10	4.0-16.0	13-45

Table 14.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	*meq/100g*	*pH*	*Pct*	*Pct*	*dS/m*	
5000:							
Copperworld-------------------	0-1	5.5-9.4	7.2-8.0	0-1	0	0	0
	1-7	7.6-23	7.2-7.4	0-1	0	0.0-1.0	0-1
	7-17	---	---	---	---	---	---
Lithic Ustic Haplargids, cool--	0-1	4.8-6.3	6.8-7.2	0-1	0	0	0
	1-10	4.8-6.1	7.2-7.2	0-1	0	0	0
	10-15	8.9-14	7.2-7.4	0-1	0	0	0
	15-25	---	---	---	---	---	---
5300:							
Lithic Ustic Haplocalcids------	0-1	2.4-6.8	8.2-8.2	40-50	0	0	0
	1-6	2.7-6.2	8.2-8.2	40-50	0	0	0
	6-15	2.9-6.6	8.2-8.2	40-50	0	0	0
	15-24	---	---	---	0	0	0
NOTCOM:							
Soils data not complete.							

Table 15.--Soil Features

[See text for definitions of terms used in this table. Absence of an entry indicates that the feature concern or that data were not estimated]

Map symbol and soil name	Restrictive layer				Potential for frost action	Ris
	Kind	Depth to top	Thickness	Hardness		Uncoa stee
		In	*In*			
3000:						
Copperworld	Lithic bedrock	4-14	---	Indurated	Moderate	Moder
Copperworld, cool	Lithic bedrock	4-14	---	Indurated	Moderate	Moder
3241:						
Langwell	Lithic bedrock	4-6	---	Indurated	Moderate	Moder
3260:						
Straycow	Paralithic bedrock	5-20	---	Moderately cemented	Low	Moder
Newera	Lithic bedrock	4-14	---	Indurated	Low	Hig
Rubble land	Lithic bedrock	40-40	---	Indurated	---	---
3261:						
Straycow	Paralithic bedrock	5-13	---	Moderately cemented	Low	Moder
Highland	Lithic bedrock	30-39	---	Indurated	Low	Hig
Straycow, moderately sloping	Paralithic bedrock	5-20	---	Moderately cemented	Low	Moder
3310:						
Birdspring	Lithic bedrock	9-10	---	Indurated	Low	Hig
Zeheme	Lithic bedrock	7-14	---	Indurated	Low	Hig
Rock outcrop.						
3320:						
Umberci	Lithic bedrock	5-10	---	Indurated	Moderate	Hig
Rock outcrop.						
3412:						
Haleburu	Lithic bedrock	4-14	---	Indurated	Low	Hig
Haleburu, dry	Lithic bedrock	4-14	---	Indurated	Low	Hig

Table 15.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Ri
	Kind	Depth to top	Thickness	Hardness		Unco ste
		In	*In*			
3420:						
Hartpeak------------------------	Lithic bedrock	20-30	---	Indurated	Low	Hi
Highland, moist-----------------	Lithic bedrock	30-39	---	Indurated	Low	Hi
3520:						
Arizo loamy sand----------------	---	---	---	---	None	Hi
3640:						
Tonopah-------------------------	---	---	---	---	None	Hi
Arizo---------------------------	---	---	---	---	Low	Hi
3641:						
Tonopah, rarely flooded---------	---	---	---	---	None	Hi
3650:						
Weiser, rarely flooded----------	---	---	---	---	None	Hi
Weiser--------------------------	---	---	---	---	None	Hi
3660:						
Colosseum, rarely flooded-------	---	---	---	---	Low	Hi
Colosseum, very rarely flooded--	---	---	---	---	Low	Hi
4122:						
Popups--------------------------	Duripan	21-39	4-22	Indurated	Moderate	Hi
4180:						
Peskah--------------------------	Duripan	39-60	10-20	Moderately cemented	None	Hi
Arizo---------------------------	---	---	---	---	Low	Hi
4190:						
Weiser, cool--------------------	---	---	---	---	Low	Lo
4200:						
Owlshead------------------------	Duripan	4-14	5-29	Moderately cemented	Low	Hi
4210:						
Ustidur-------------------------	Duripan	4-14	20-39	Weakly cemented	Low	Hi

Table 15.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Ris
	Kind	Depth to top	Thickness	Hardness		Uncoa stee
		In	*In*			
4220:						
Minehart	---	---	---	---	Low	Hig
4230:						
Hoppswell	---	---	---	---	Moderate	Hig
Ustidur	Duripan	4-14	20-39	Weakly cemented	Moderate	Hig
4703:						
Typic Haplosalids, ponded	---	---	---	---	Low	Hig
4711:						
Bluepoint	---	---	---	---	Low	Hig
Petronodic Haplocalcids	---	---	---	---	Low	Hig
4760:						
Hypoint, overblown	---	---	---	---	Low	Hig
Pipeflat	---	---	---	---	Low	Hig
4765:						
Typic Calcigypsids	---	---	---	---	Low	Hig
Typic Haplosalids, ponded	---	---	---	---	Low	Hig
4770:						
Haymont	---	---	---	---	Low	Hig
Haymont, moist	---	---	---	---	Low	Hig
Bluepoint	---	---	---	---	Low	Hig
4775:						
Petronodic Haplocalcids	---	---	---	---	Low	Moder
Calcic Petrocalcids	Petrocalcic	24-30	30-35	Very strongly cemented	Low	Moder
4820:						
Playa	---	---	---	---	None	Hig
5000:						
Copperworld	Lithic bedrock	7-15	---	Indurated	Moderate	Moder
Lithic Ustic Haplargids, cool	Lithic bedrock	7-15	---	Indurated	Moderate	Moder

Table 15.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Ri[cut off]
	Kind	Depth to top	Thickness	Hardness		Unco[cut off] ste[cut off]
		In	*In*			
5300:						
Lithic Ustic Haplocalcids-------	Lithic bedrock	14-18	---	Indurated	Moderate	Mode[cut off]
NOTCOM:						
Soils data not complete.						

Table 16.--Water Features

[Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequ
and flooding apply to the whole year rather than to individual months. Absence of an entry indicates t
is not a concern or that data were not estimated]

Map symbol and soil name	Hydro-logic group	Month	Water table		Ponding			
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration
			Ft	Ft	Ft			
3000:								
Copperworld	D							
		Jan-Dec	---	---	---	---	None	---
Copperworld, cool	D							
		Jan-Dec	---	---	---	---	None	---
3241:								
Langwell	D							
		Jan-Dec	---	---	---	---	None	---
3260:								
Straycow	D							
		Jan-Dec	---	---	---	---	None	---
Newera	D							
		Jan-Dec	---	---	---	---	None	---
Rubble land	A							
		Jan-Dec	---	---	---	---	None	---
3261:								
Straycow	D							
		Jan-Dec	---	---	---	---	None	---
Highland	C							
		Jan-Dec	---	---	---	---	None	---
Straycow, moderately sloping	D							
		Jan-Dec	---	---	---	---	None	---
3310:								
Birdspring	D							
		Jan-Dec	---	---	---	---	None	---
Zeheme	D							
		Jan-Dec	---	---	---	---	None	---
Rock outcrop	---							
		Jan-Dec	---	---	---	---	None	---

Table 16.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Duration
			Ft	Ft	Ft			
3320:								
Umberci	D							
		Jan-Dec	---	---	---	---	None	---
3412:								
Haleburu	D							
		Jan-Dec	---	---	---	---	None	---
Haleburu, dry	D							
		Jan-Dec	---	---	---	---	None	---
3420:								
Hartpeak	C							
		Jan-Dec	---	---	---	---	None	---
Highland, moist	C							
		Jan-Dec	---	---	---	---	None	---
3520:								
Arizo loamy sand	A							
		Jan-Mar	---	---	---	---	None	Extremely b
		Apr-June	---	---	---	---	None	---
		Jul-Sept	---	---	---	---	None	Extremely b
		Oct-Nov	---	---	---	---	None	---
		December	---	---	---	---	None	Extremely b
3640:								
Tonopah	A							
		Jan-Dec	---	---	---	---	None	Very brief
Arizo	A							
		Jan-Dec	---	---	---	---	None	Very brief
3641:								
Tonopah, rarely flooded	A							
		Jan-Mar	---	---	---	---	None	Very brief
		Apr-June	---	---	---	---	None	---
		Jul-Sept	---	---	---	---	None	Very brief
		Oct-Nov	---	---	---	---	None	---
		December	---	---	---	---	None	Very brief

Table 16.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table		Ponding			
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration
			Ft	*Ft*	*Ft*			
3650:								
Weiser, rarely flooded----------	B							
		Jan-Mar	---	---	---	---	None	Very brief
		Apr-June	---	---	---	---	None	---
		Jul-Sept	---	---	---	---	None	Very brief
		Oct-Nov	---	---	---	---	None	---
		December	---	---	---	---	None	Very brief
Weiser-------------------------	B							
		Jan-Dec	---	---	---	---	None	---
3660:								
Colosseum, rarely flooded-------	A							
		Jan-Mar	---	---	---	---	None	Extremely b
		Apr-June	---	---	---	---	None	---
		Jul-Sept	---	---	---	---	None	Extremely b
		Oct-Nov	---	---	---	---	None	---
		December	---	---	---	---	None	Extremely b
Colosseum, very rarely flooded--	A							
		Jan-Mar	---	---	---	---	None	Extremely b
		Apr-June	---	---	---	---	None	---
		Jul-Sept	---	---	---	---	None	Extremely b
		Oct-Nov	---	---	---	---	None	---
		December	---	---	---	---	None	Extremely b
4122:								
Popups-------------------------	B							
		Jan-Dec	---	---	---	---	None	---
4180:								
Peskah-------------------------	C							
		Jan-Dec	---	---	---	---	None	---
Arizo--------------------------	A							
		Jan-Dec	---	---	---	---	None	Very brief
4190:								
Weiser, cool-------------------	B							
		Jan-Dec	---	---	---	---	None	---
4200:								
Owlshead-----------------------	C							
		Jan-Dec	---	---	---	---	None	---

Table 16.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Duration
			Ft	Ft	Ft			
4210:								
Ustidur------------------------	D							
		Jan-Dec	---	---	---	---	None	---
4220:								
Minehart-----------------------	C							
		Jan-Dec	---	---	---	---	None	---
4230:								
Hoppswell----------------------	C							
		Jan-Dec	---	---	---	---	None	Very brief
Ustidur------------------------	D							
		Jan-Dec	---	---	---	---	None	---
4703:								
Typic Haplosalids, ponded-------	B							
		Jan-Feb	---	---	0.1-0.3	Brief	Occasional	---
		Mar-June	---	---	---	---	None	---
		Jul-Aug	---	---	0.1-0.3	Brief	Occasional	---
		Sept-Dec	---	---	---	---	None	---
4711:								
Bluepoint----------------------	A							
		Jan-Dec	---	---	---	---	None	---
Petronodic Haplocalcids---------	B							
		Jan-Dec	---	---	---	---	None	---
4760:								
Hypoint, overblown--------------	A							
		Jan-Dec	---	---	---	---	None	---
Pipeflat-----------------------	A							
		Jan-Dec	---	---	---	---	None	---
4765:								
Typic Calcigypsids--------------	B							
		Jan-Dec	---	---	---	---	None	---
Typic Haplosalids, ponded-------	B							
		Jan-Mar	---	---	0.1-0.7	Long	Frequent	---
		Apr-June	---	---	---	---	None	---
		Jul-Sept	---	---	0.0-0.7	Long	Frequent	---
		Oct-Nov	---	---	---	---	None	---
		December	---	---	0.1-0.7	Long	Frequent	---

Table 16.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	F[illegible]: Duration
			Ft	Ft	Ft			
4770:								
Haymont------------------------	B							
		Jan-Mar	---	---	---	---	None	Very brief
		Apr-Oct	---	---	---	---	None	---
		Nov-Dec	---	---	---	---	None	Very brief
Haymont, moist-----------------	B							
		Jan-Mar	---	---	---	---	None	Very brief
		Apr-Oct	---	---	---	---	None	---
		Nov-Dec	---	---	---	---	None	Very brief
Bluepoint----------------------	A							
		Jan-Dec	---	---	---	---	None	---
4775:								
Petronodic Haplocalcids---------	B							
		Jan-Mar	---	---	0.0-0.1	Very brief	Rare	Extremely br
		Apr-June	---	---	---	---	None	---
		Jul-Aug	---	---	0.0-0.1	Very brief	Rare	Extremely br
		Sept-Nov	---	---	---	---	None	---
		December	---	---	0.0-0.1	Very brief	Rare	Extremely br
Calcic Petrocalcids-------------	C							
		Jan-Mar	---	---	0.0-0.1	Very brief	Rare	---
		Apr-June	---	---	---	---	None	---
		Jul-Sept	---	---	0.0-0.1	Very brief	Rare	---
		Oct-Nov	---	---	---	---	None	---
		December	---	---	0.0-0.1	Very brief	Rare	---
4820:								
Playa--------------------------	D							
		Jan-Apr	---	---	---	Very long	Frequent	---
		May-Dec	---	---	---	---	None	---
5000:								
Copperworld--------------------	D							
		Jan-Dec	---	---	---	---	None	---
Lithic Ustic Haplargids, cool---	D							
		January	---	---	---	---	None	---
5300:								
Lithic Ustic Haplocalcids-------	D							
		Jan-Dec	---	---	---	---	None	---

Table 17.--Taxonomic Classification of the Soils

[An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series]

Soil name	Family or higher taxonomic class
Arizo	Sandy-skeletal, mixed, thermic Typic Torriorthents
Birdspring	Loamy-skeletal, carbonatic, thermic Lithic Torriorthents
Bluepoint	Mixed, thermic Typic Torripsamments
Calcic Petrocalcids	Coarse-loamy, carbonatic, thermic Calcic Petrocalcids
Colosseum	Sandy-skeletal, carbonatic, thermic Typic Haplocalcids
Copperworld	Loamy, mixed, superactive, thermic Lithic Haplargids
*Copperworld	Loamy, mixed, superactive, mesic Lithic Haplargids
Haleburu	Loamy-skeletal, mixed, superactive, calcareous, thermic Lithic Torriorthents
Hartpeak	Loamy-skeletal, mixed, superactive, thermic Ustic Haplargids
Haymont	Coarse-silty, mixed, superactive, calcareous, thermic Typic Torriorthents
Highland	Loamy-skeletal, mixed, superactive, thermic Typic Haplargids
Hoppswell	Loamy-skeletal, mixed, superactive, thermic Ustic Haplargids
Hypoint	Sandy, mixed, thermic Typic Torriorthents
Langwell	Loamy, mixed, superactive, calcareous, thermic Lithic Torriorthents
Lithic Ustic Haplargids	Loamy-skeletal, mixed, superactive, mesic Lithic Ustic Haplargids
Lithic Ustic Haplocalcids	Loamy-skeletal, carbonatic, mesic Lithic Ustic Haplocalcids
Minehart	Fine-loamy, mixed, superactive, thermic Ustic Paleargids
Newera	Loamy-skeletal, mixed, superactive, thermic Lithic Haplargids
Owlshead	Loamy-skeletal, mixed, superactive, thermic, shallow Cambidic Haplodurids
Peskah	Loamy-skeletal, mixed, superactive, thermic Duric Petroargids
Petronodic Haplocalcids	Fine-silty, mixed, superactive, thermic Petronodic Haplocalcids
Pipeflat	Loamy, mixed, superactive, thermic Arenic Haplargids
Popups	Coarse-loamy, mixed, superactive, thermic Argidic Argidurids
Straycow	Loamy-skeletal, mixed, superactive, thermic, shallow Typic Haplargids
Tonopah	Sandy-skeletal, mixed, thermic Typic Haplocalcids
Typic Calcigypsids	Coarse-loamy, gypsic, thermic Typic Calcigypsids
Typic Haplosalids	Fine-loamy, mixed, superactive, thermic Typic Haplosalids
Typic Haplosalids	Fine-silty, mixed, superactive, thermic Typic Haplosalids
Umberci	Loamy-skeletal, carbonatic, thermic Lithic Torriorthents
Ustidur	Loamy-skeletal, mixed, superactive, thermic, shallow Cambidic Haplodurids
Weiser	Loamy-skeletal, carbonatic, thermic Typic Haplocalcids
Zeheme	Loamy-skeletal, carbonatic, thermic Lithic Haplocalcids

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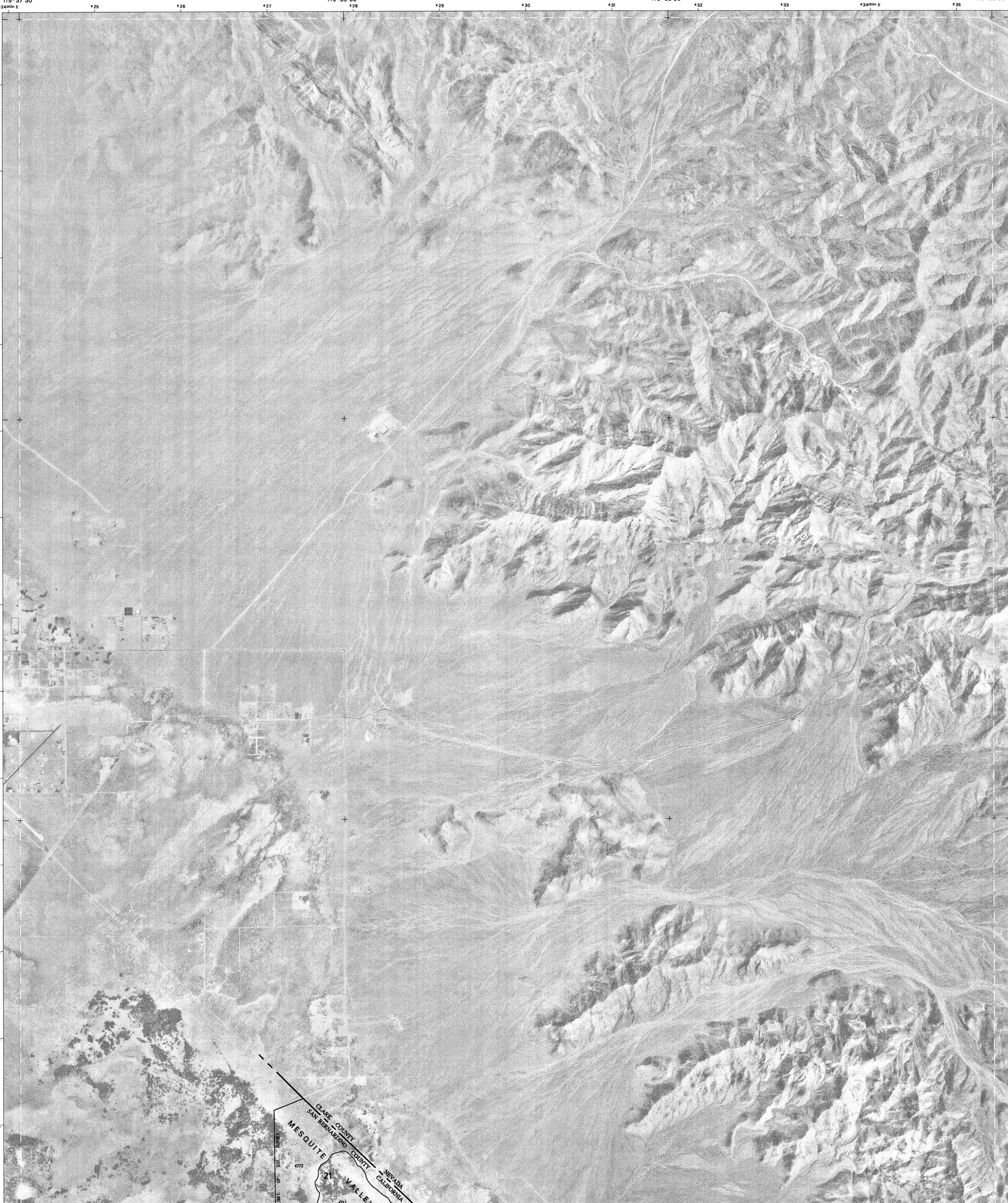
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
SHENANDOAH PEAK QUADRANGLE
SHEET NUMBER 1 OF 13



Joins sheet 2 Mesquite Mountain

Joins sheet 3 Mesquite Lake

Joins sheet 4 State Line Pass

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North American Datum of 1983(NAD83). GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

2 MESQUITE MOUNTAIN
3 MESQUITE LAKE
4 STATE LINE PASS

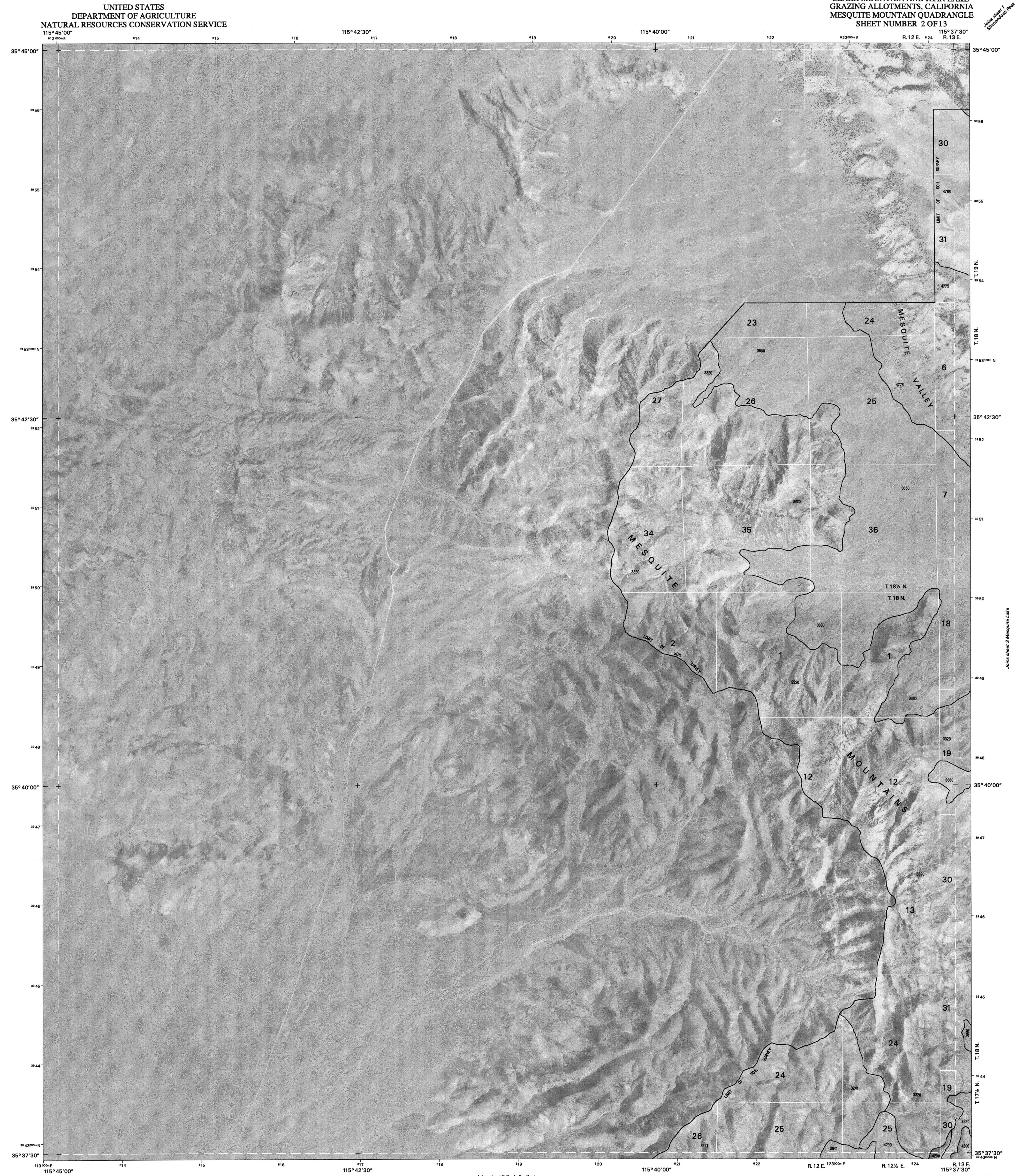
INDEX TO ADJOINING 7.5 MAPS

SHENANDOAH PEAK, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 1 OF 13

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
MESQUITE MOUNTAIN QUADRANGLE
SHEET NUMBER 2 OF 13



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

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3 MESQUITE LAKE
5 PACHALKA SPRING
6 CLARK MOUNTAIN

MESQUITE MOUNTAIN, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 13

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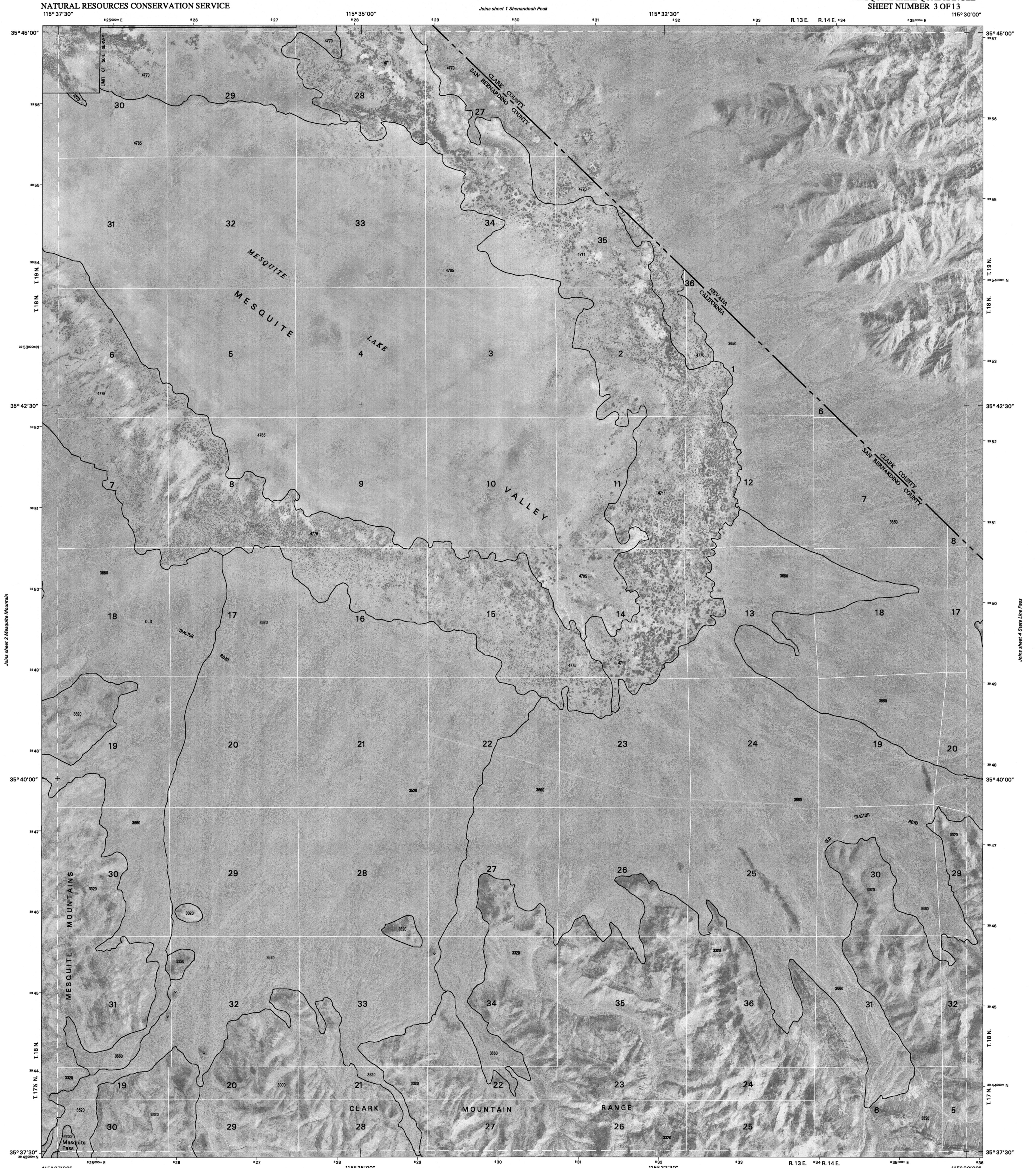
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
MESQUITE LAKE QUADRANGLE
SHEET NUMBER 3 OF 13



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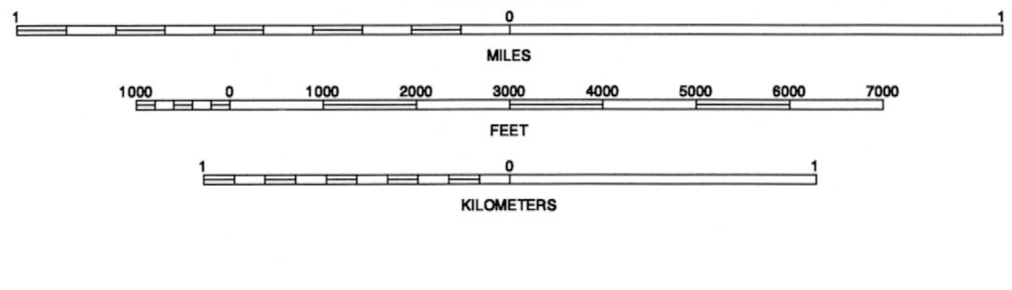
QUADRANGLE LOCATION

SCALE 1:24000



	1	
2		4
5	6	7

1 SHENANDOAH PEAK
2 MESQUITE MOUNTAIN
4 STATE LINE PASS
5 PACHALKA SPRING
6 CLARK MOUNTAIN
7 IVANPAH LAKE

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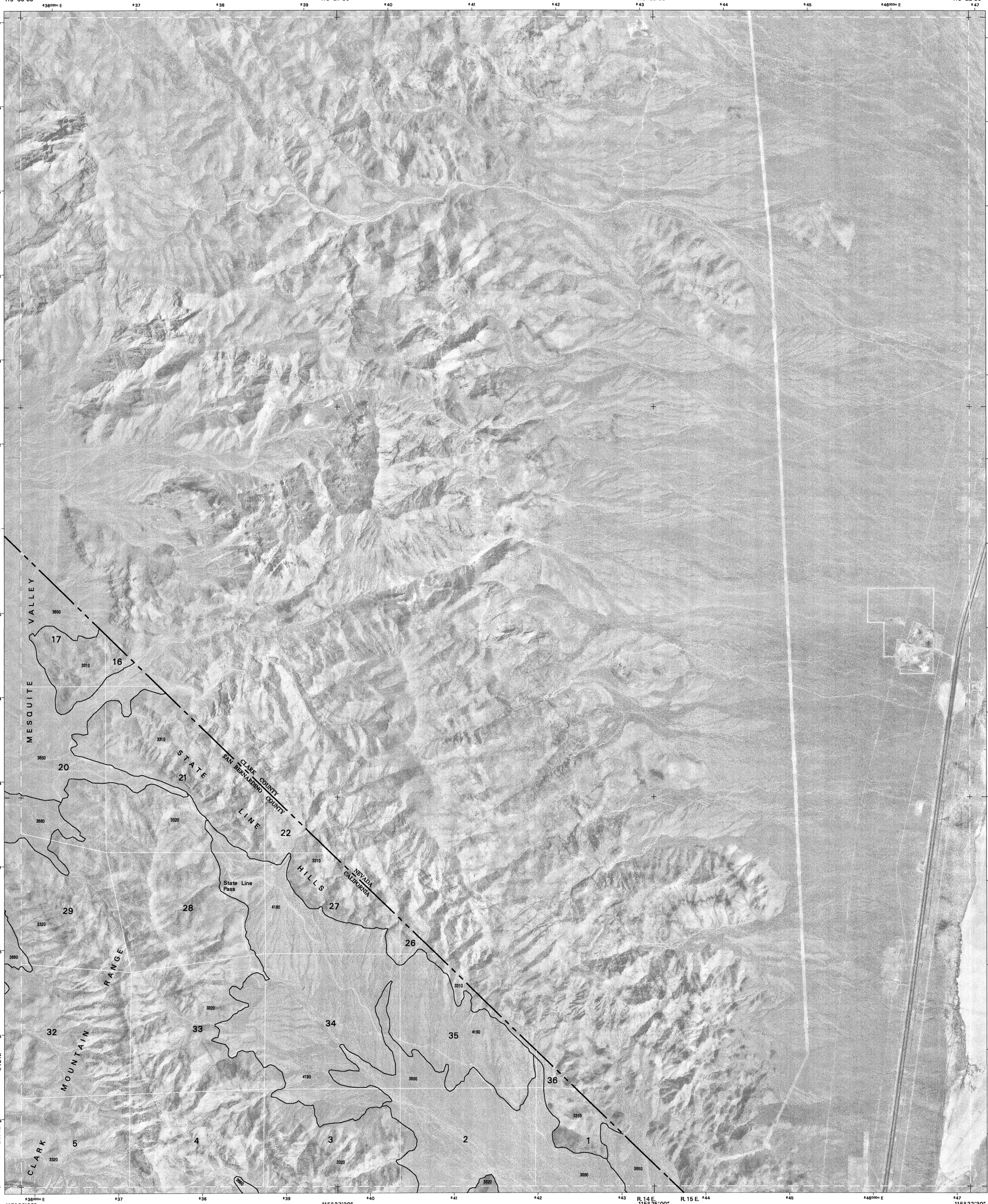
NATURAL RESOURCES CONSERVATION SERVICE

CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
STATE LINE PASS QUADRANGLE
SHEET NUMBER 4 OF 13



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

1 SHENANDOAH PEAK
3 MESQUITE LAKE
6 CLARK MOUNTAIN
7 IVANPAH LAKE
8 DESERT

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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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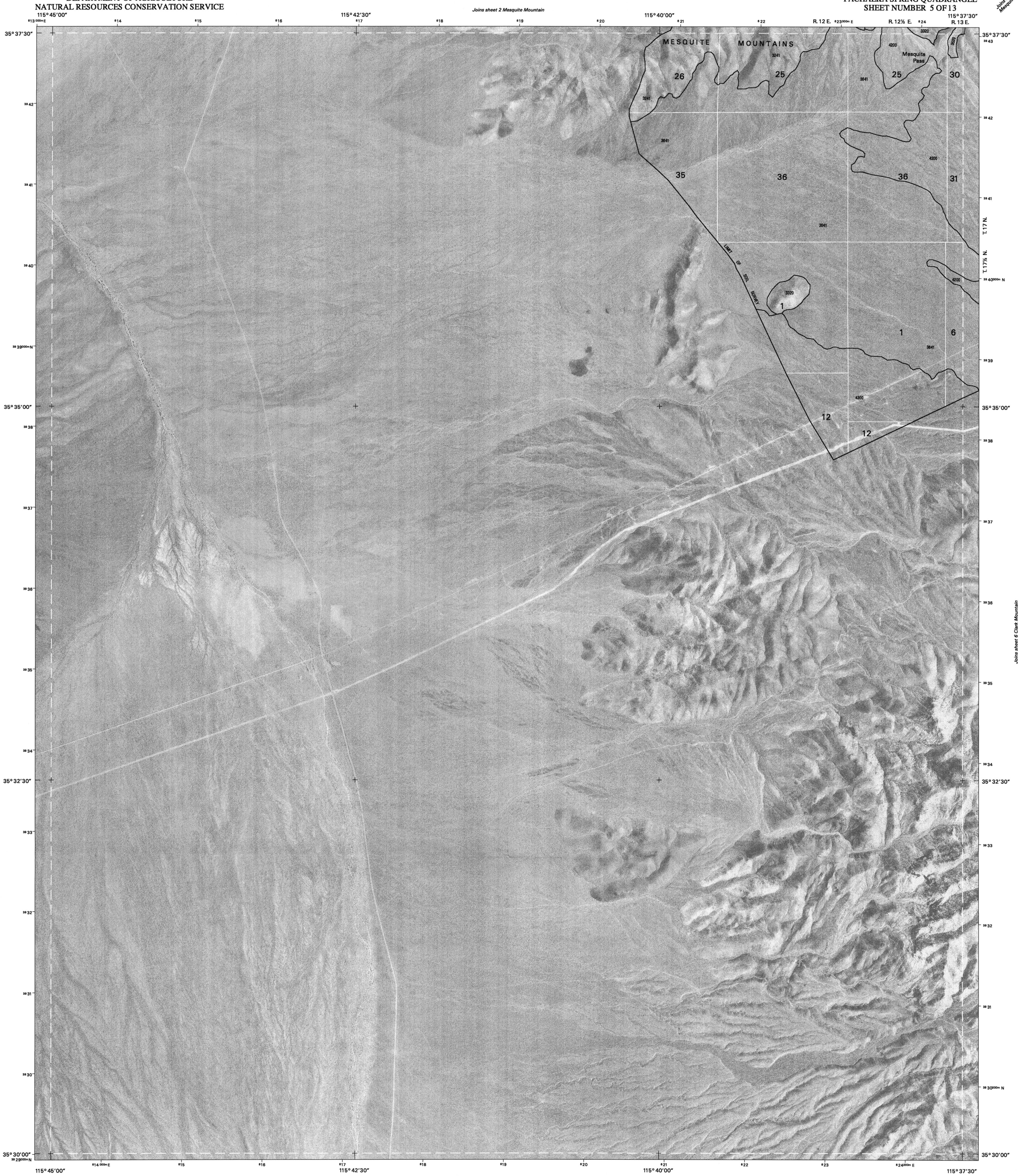
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLARK MOUNTAIN AND JEAN LAKE GRAZING ALLOTMENTS, CALIFORNIA
PACHALKA SPRING QUADRANGLE
SHEET NUMBER 5 OF 13



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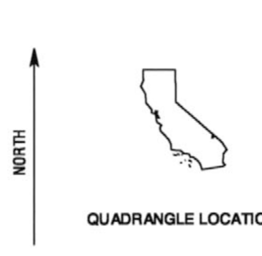

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

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2 MESQUITE MOUNTAIN
3 MESQUITE LAKE
6 CLARK MOUNTAIN
9 MESCAL RANGE

PACHALKA SPRING, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 5 OF 13

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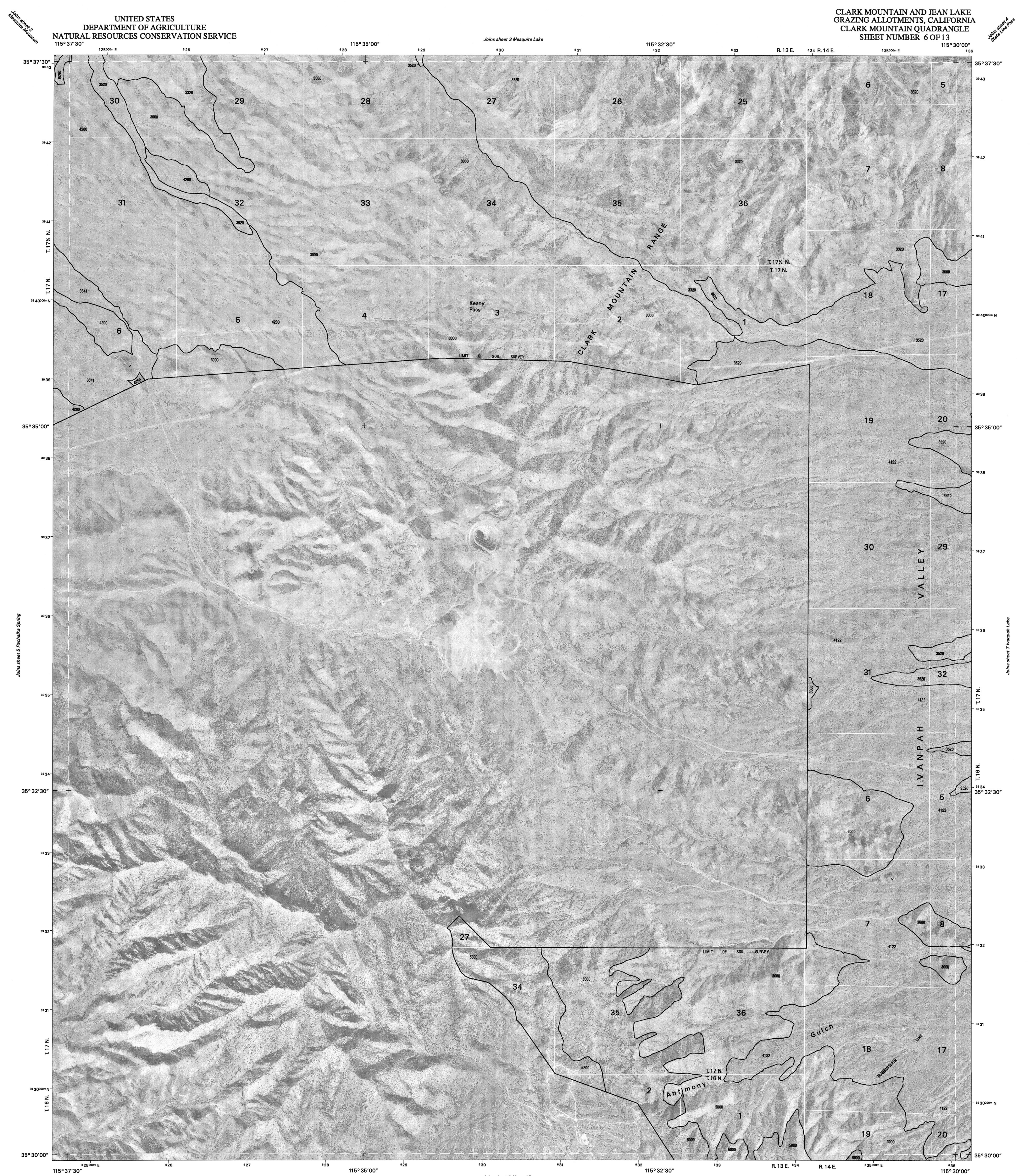

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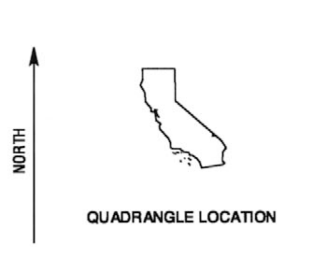
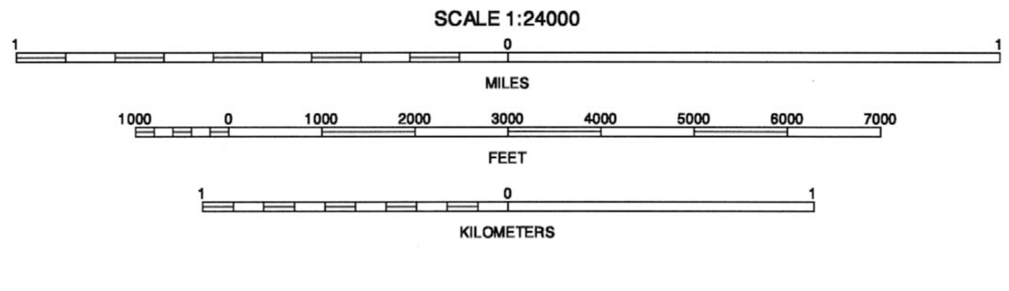
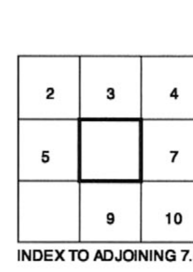


QUADRANGLE LOCATION

SCALE 1:24000





2 MESQUITE MOUNTAIN
3 MESQUITE LAKE
4 STATE LINE PASS
5 PACHALKA SPRING
7 IVANPAH LAKE
9 MESCAL RANGE
10 MINERAL HILL

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CLARK MOUNTAIN, CALIFORNIA
7.5 MINUTE SERIES
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CLARK MOUNTAIN AND JEAN LAKE GRAZING ALLOTMENTS, CALIFORNIA
IVANPAH LAKE QUADRANGLE
SHEET NUMBER 7 OF 13

Joins sheet 3 Mesquite Lake

Joins sheet 4 State Line Pass

Joins sheet 6 Clark Mountain

Joins sheet 8 Desert

Joins sheet 9 Mescal Range

Joins sheet 10 Mineral Hill

Joins sheet 11 Nipton

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES 1 0 1

FEET 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS 1 0 1

3	4	
6		8
9	10	11

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8 DESERT
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IVANPAH LAKE, CALIFORNIA
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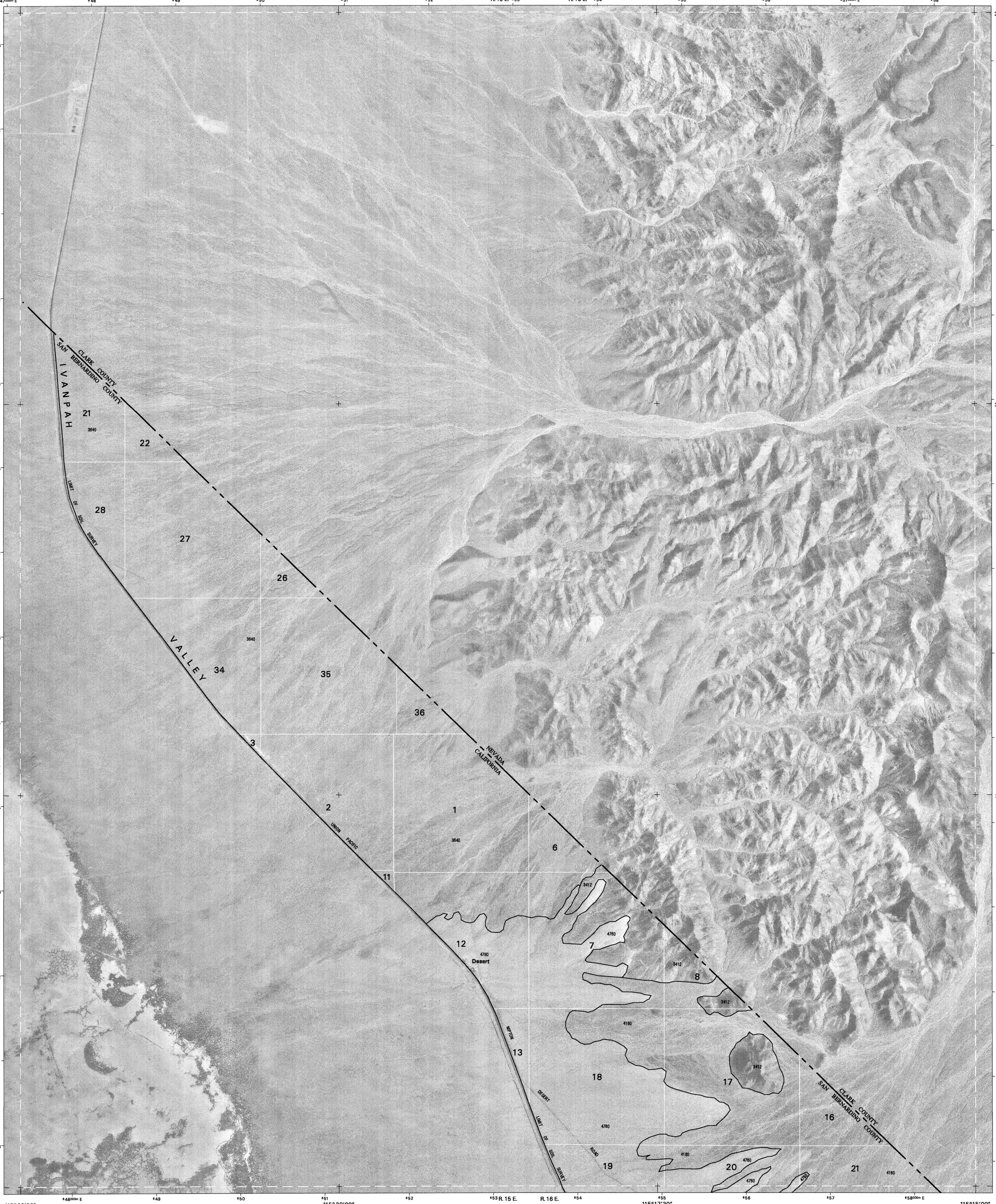

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

	4		4 STATE LINE PASS
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UNITED STATES
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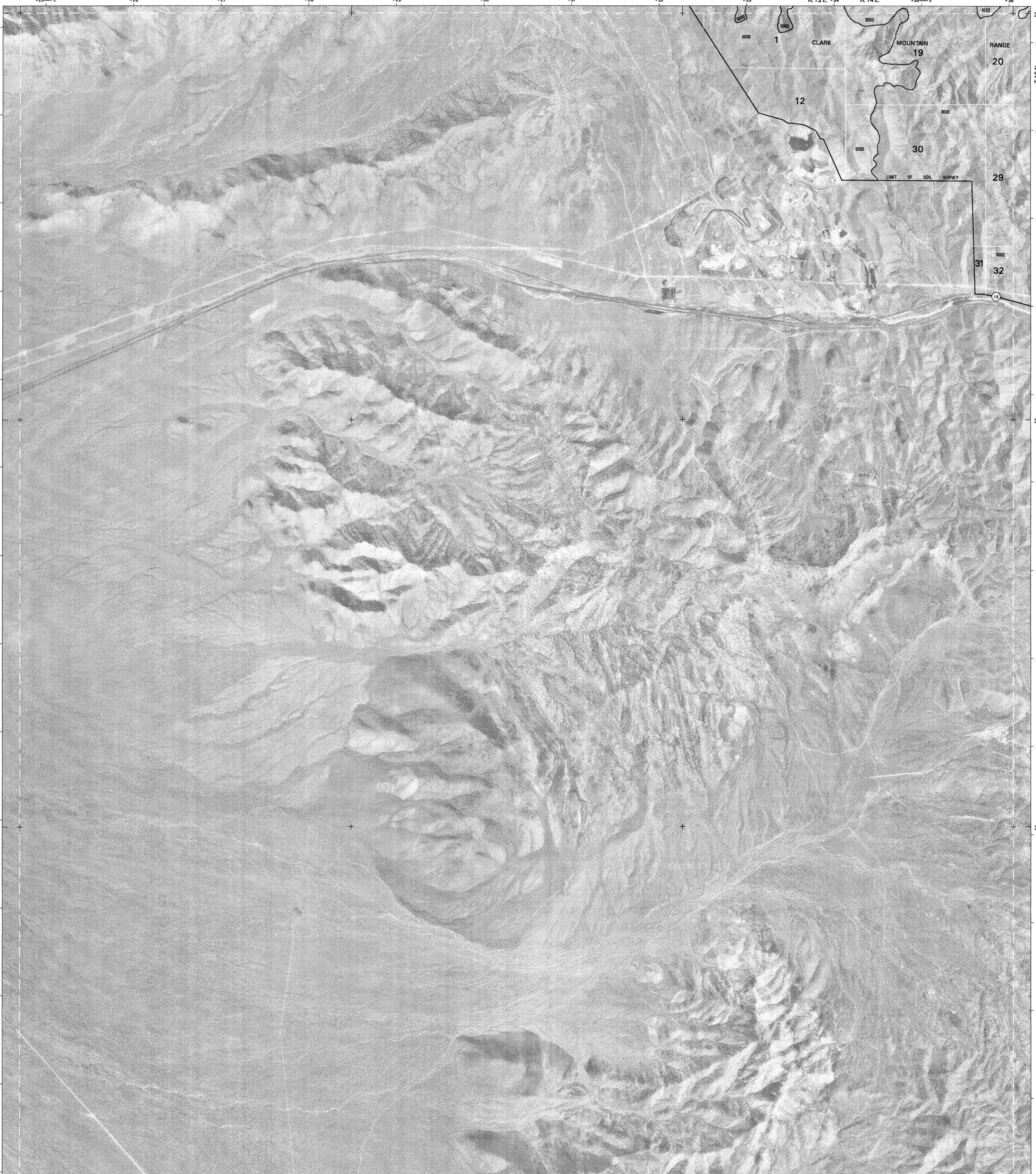
CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
MESCAL RANGE QUADRANGLE
SHEET NUMBER 9 OF 13



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

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		10

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MESCAL RANGE, CALIFORNIA

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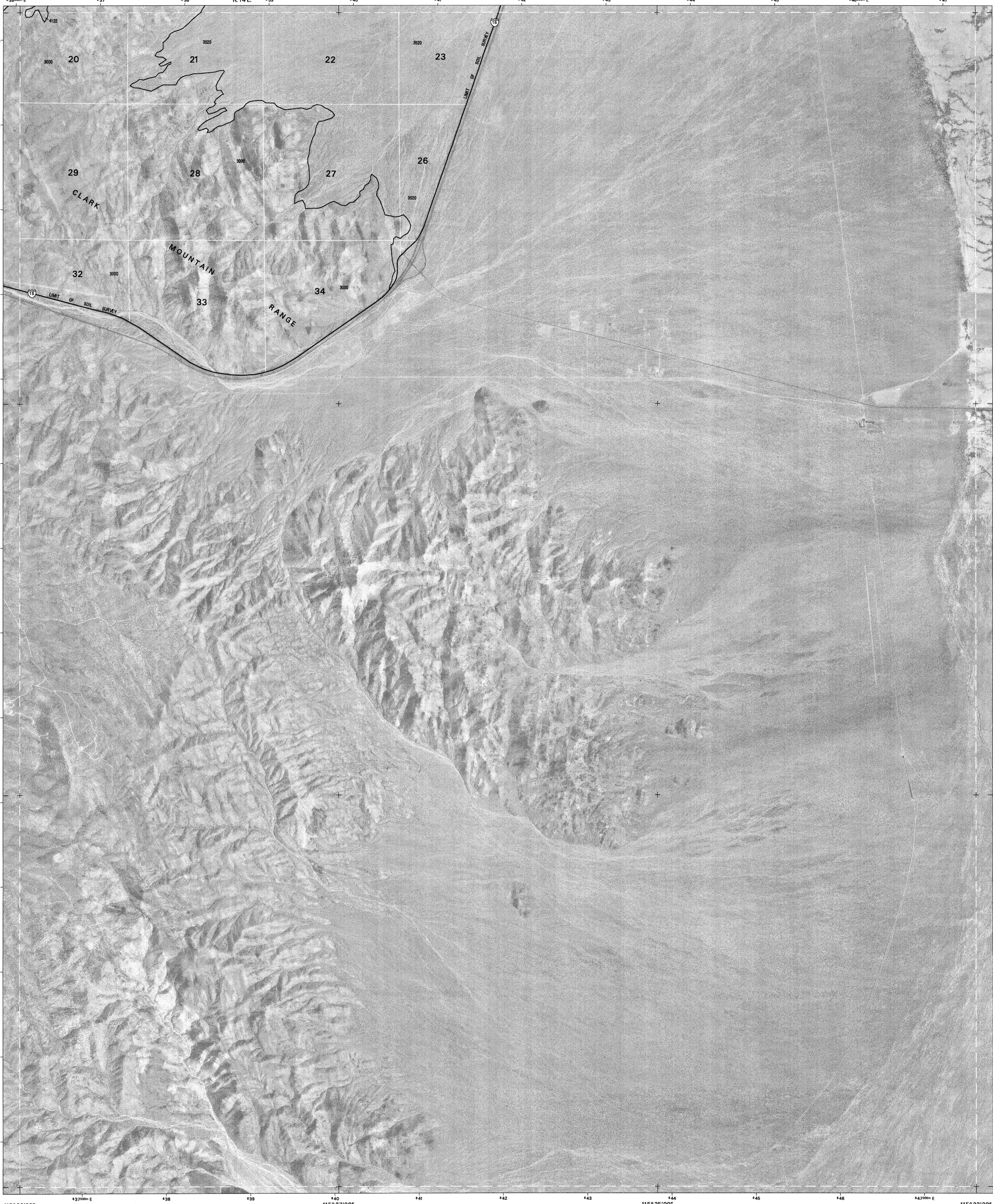
NATURAL RESOURCES CONSERVATION SERVICE

CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
MINERAL HILL QUADRANGLE
SHEET NUMBER 10 OF 13



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

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DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
NIPTON QUADRANGLE
SHEET NUMBER 11 OF 13

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

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KILOMETERS

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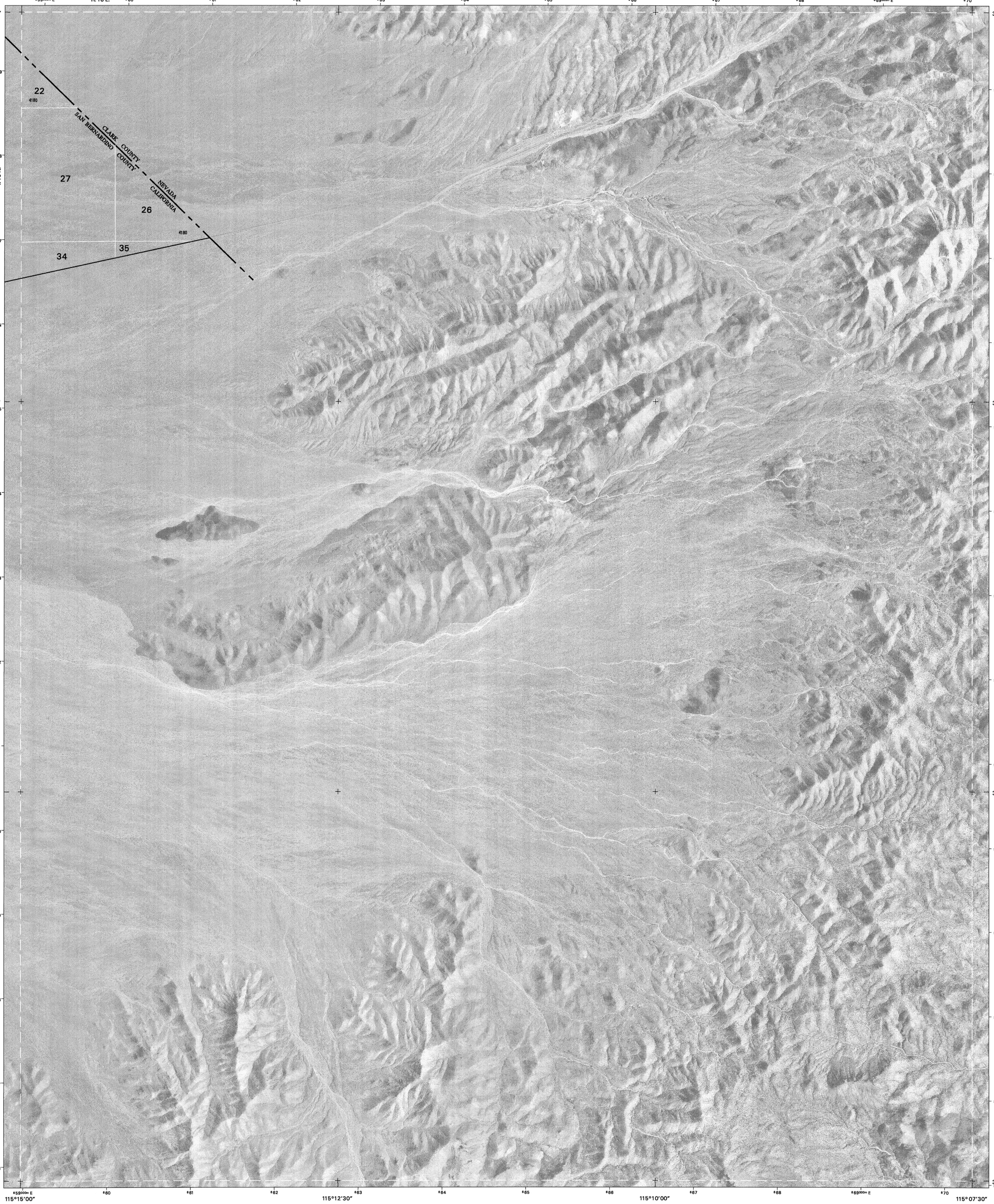
CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
CRESCENT PEAK QUADRANGLE
SHEET NUMBER 12 OF 13



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NORTH

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SCALE 1:24000

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CRESCENT PEAK, CALIFORNIA

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UNITED STATES
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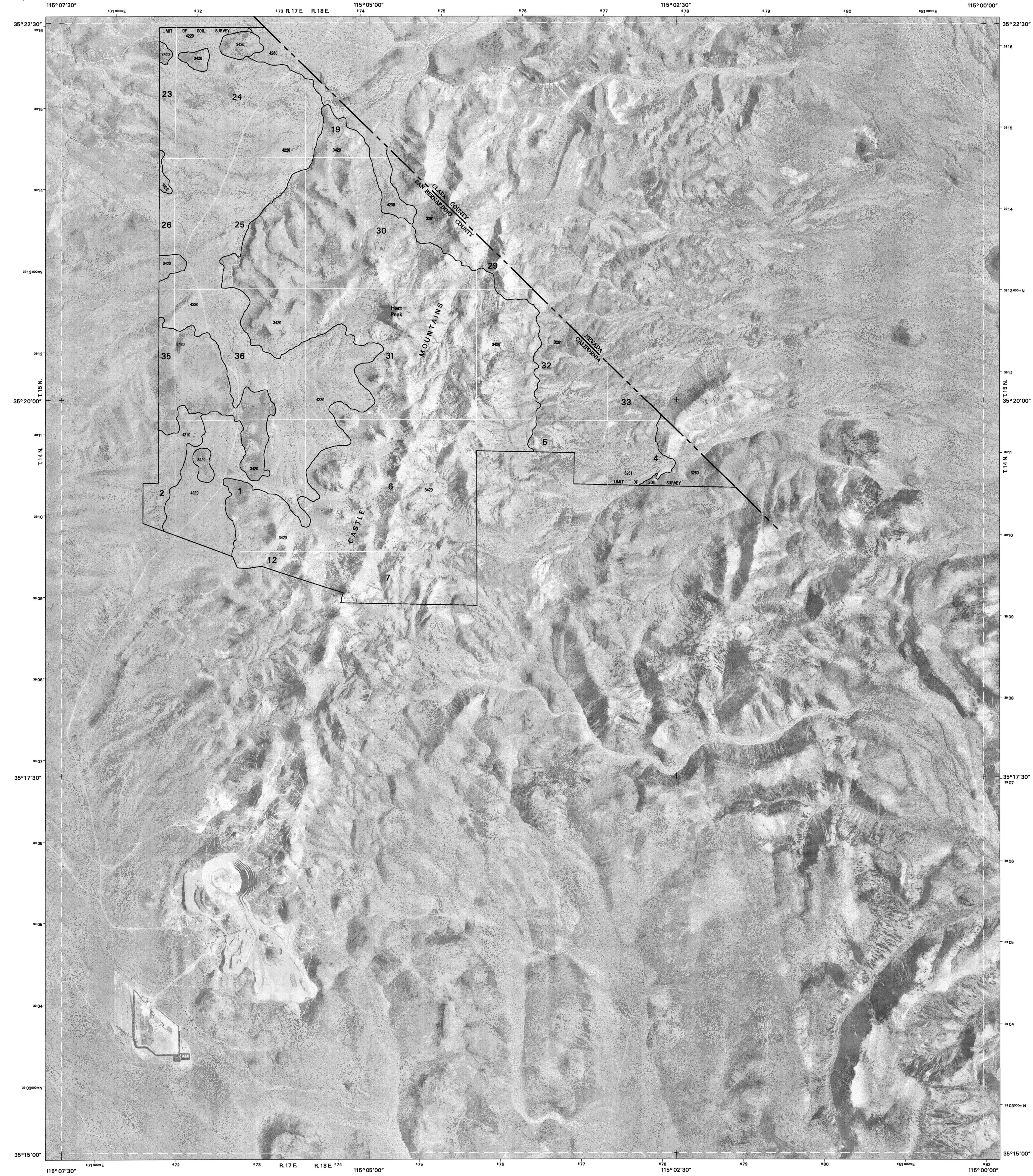
NATURAL RESOURCES CONSERVATION SERVICE

CLARK MOUNTAIN AND JEAN LAKE
GRAZING ALLOTMENTS, CALIFORNIA
HART PEAK QUADRANGLE
SHEET NUMBER 13 OF 13



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

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HART PEAK, CALIFORNIA
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